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WAR MACHINE

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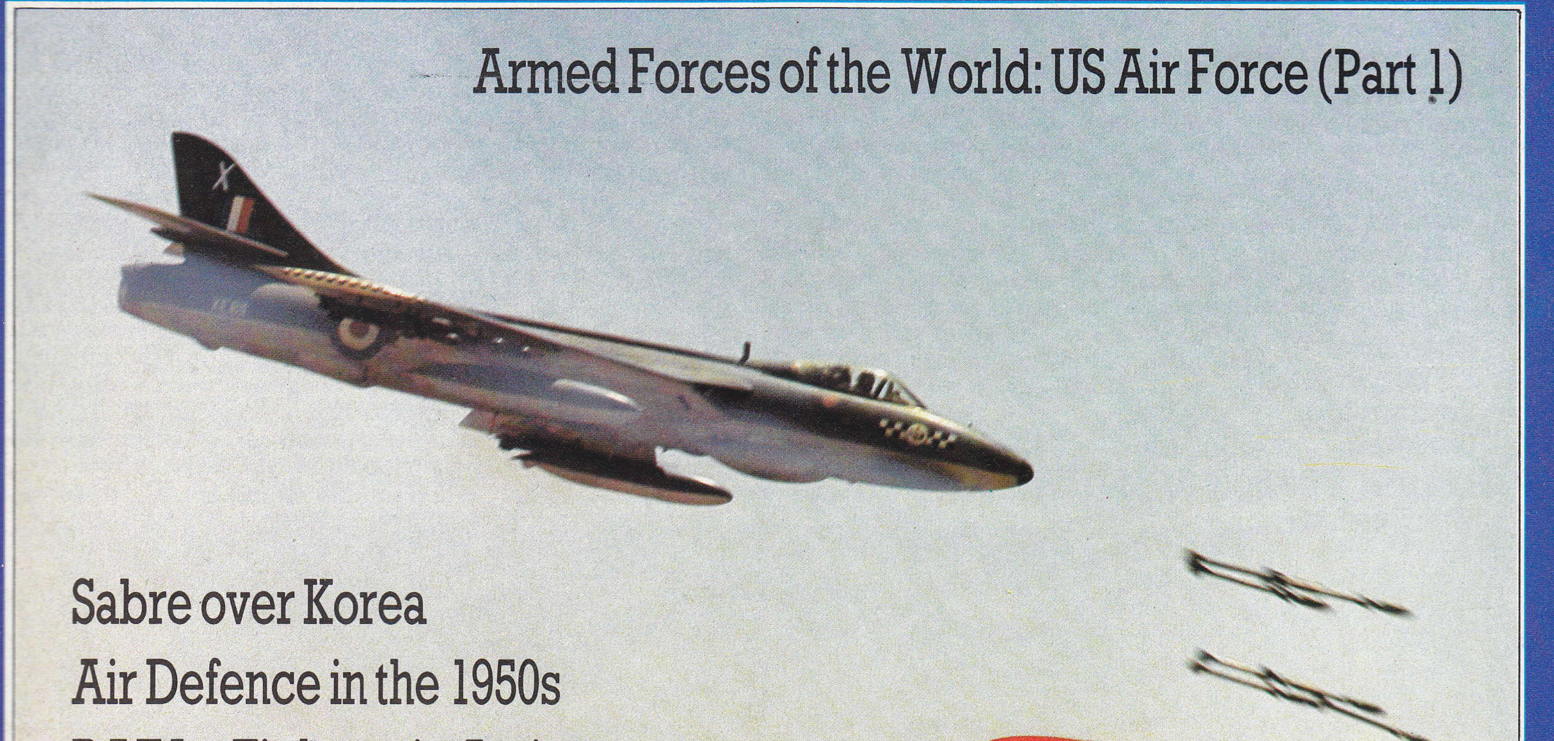

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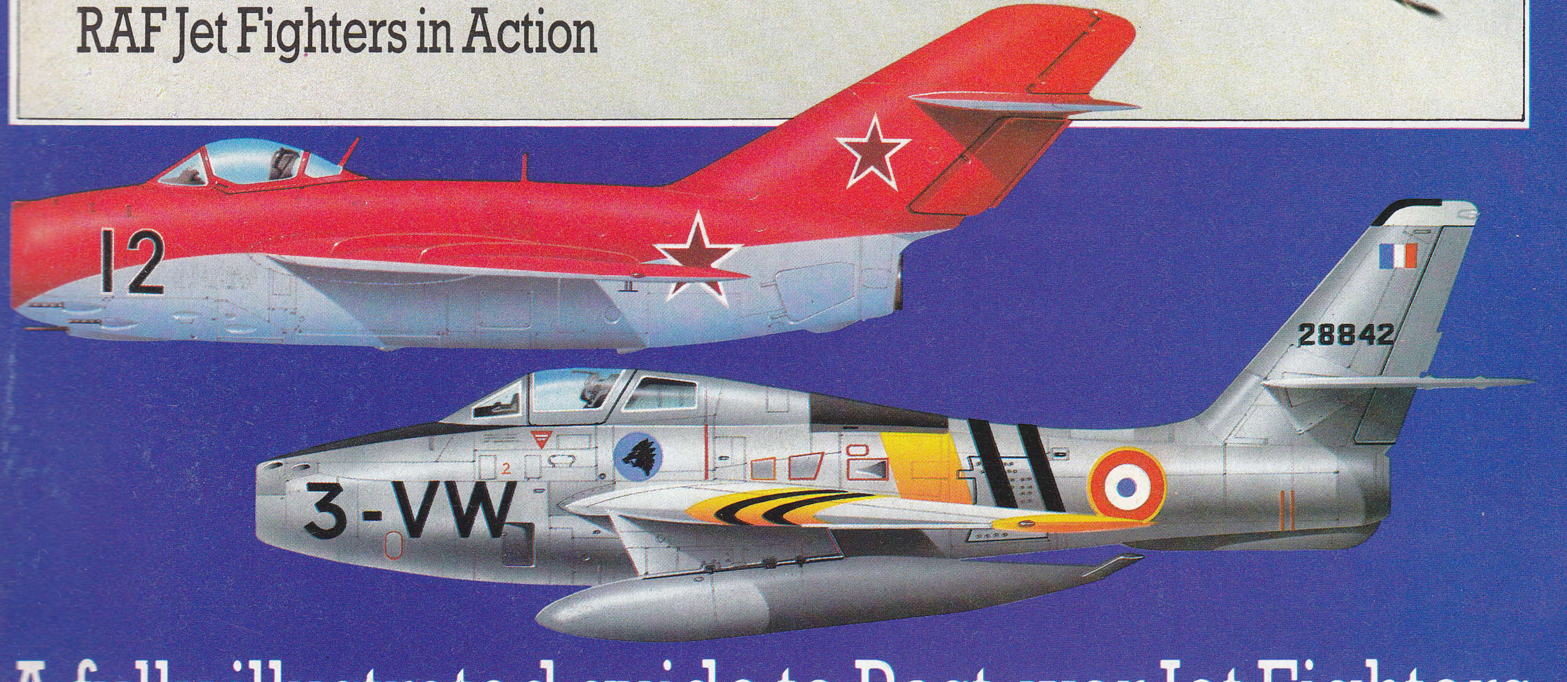

A fully illustrated guide to Post-war Jet Fighters

WAR MACHINE

Volume 4 **Issue 45**

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Post-war Jet Fighters

The Korean war saw the first jet-versus-jet dogfights and the beginning of a faster, more deadly kind of air combat. The 1950s brought rapid development of jet fighters, and at different times the Meteor, Sabre, Swift and Hunter all held the world speed record. Many of the fighters of this era went on to serve in other roles after ceasing as interceptors, and some still fly today.

A prototype of the Republic F-84F Thunderstreak fires 127-mm (5-in) HVAR rockets against a ground target on a test mission over a desert range. After colossal problems, centred on the greatly revised but basically British engine, 2,711 of these powerful F-84Fs were built.

Of the almost 40 years which have elapsed since the end of World War II the decade of the 1950s was in all probability the golden age as far as the jet fighter is concerned. At the beginning of that decade, the jet was no longer such a rare sight, examples of classic fighters like the Gloster Meteor, de Havilland Vampire, North American Sabre and Republic Thunderjet being well established in service whilst the second generation was already beginning to make its presence felt on drawing boards throughout the world.

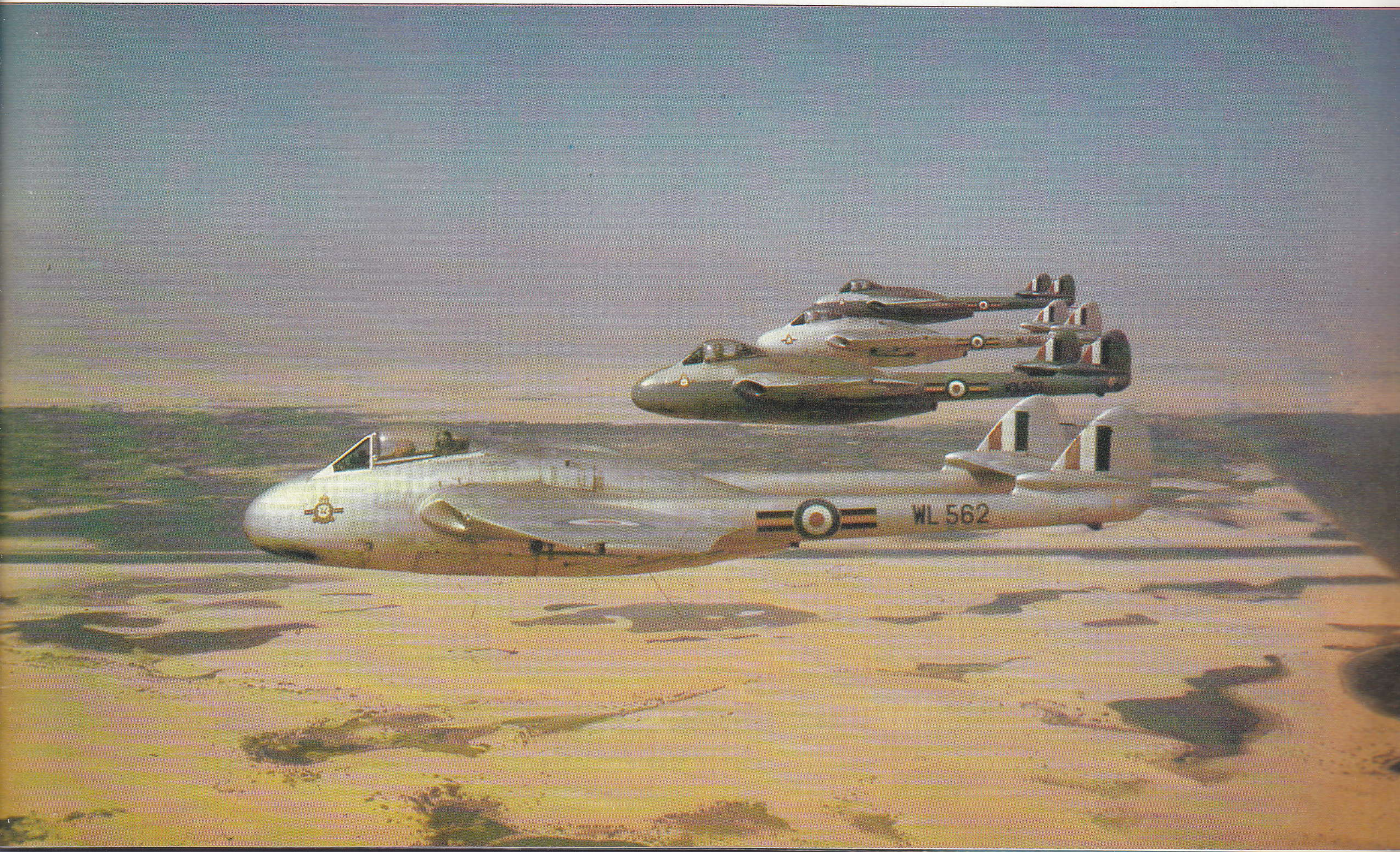
The 1950s were also notable in that they featured the first aerial encounters between jet fighters, an event which ended in clear-cut supremacy for the United States, whose Sabre repeatedly demonstrated superior pilot skill over the pilots of the rival MiG-15, an edge which was to be retained until well into the 1960s.

Although the USA, the Soviet Union and the United Kingdom generally led the way in the development of jet fighters, other nations (most notably France and Sweden) provided clear notice that they were not content merely to sit back and become customers; instead they conceived and produced their own products which bore close comparison with those of the 'big three'.

One interesting side-effect of the great proliferation of jet-powered fighters concerned the world speed record, the 1950s being an era of great progress in this sphere of aeronautical endeavour with a succession of types raising the mark to speeds which were almost inconceivable just a few years earlier.

Ultimately, though, the 1950s also marked a shift away from the manned fighter, this being perhaps most evident in the notorious 1957 British Defence White Paper which envisaged the role of aerial defence being largely entrusted to missiles in future years. Today, with the benefit of hindsight, we can see just how wrong this philosophy was, but at the time it resulted in the cancellation of a number of outstanding projects, doing almost irreparable damage to the aviation industries of several countries, including the UK and Canada.

Four de Havilland Vampire FB.Mk 9s of No. 213 Sqn, RAF, fly from Deversoir in the Canal Zone of Egypt. The Vampire's simple construction and ease of operation made it particularly suitable for service overseas, and when it was withdrawn it was replaced by the essentially similar de Havilland Venom.



USSR

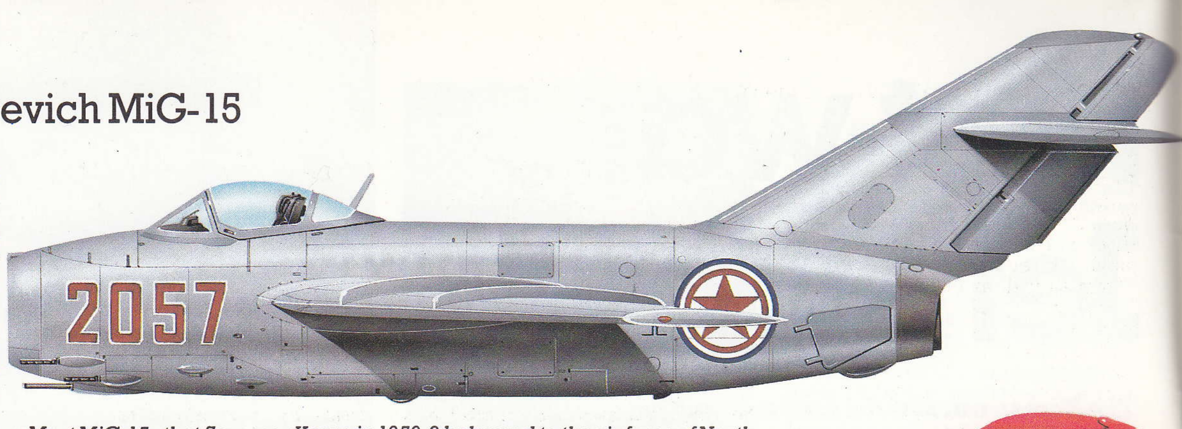
Mikoyan-Gurevich MiG-15

A result of German and Soviet research, the **Mikoyan-Gurevich MiG-15** first came to the attention of the West in November 1950 when it made its combat debut in the Korean War, being coded **'Fagot'**. A true contemporary of the North American F-86 Sabre, the MiG-15 was superior in some respects, possessing a better climb rate and greater acceleration, although these advantages were more than nullified by the better training given to the American pilots who eventually succeeded in destroying several hundred MiG-15s.

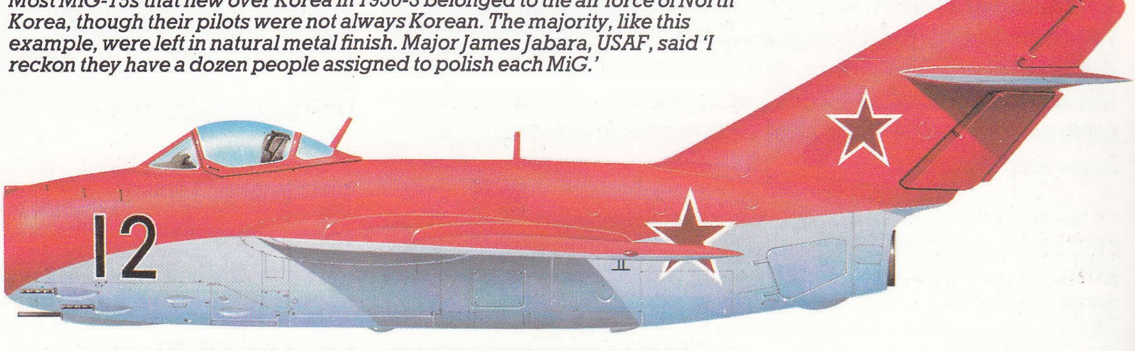
Initial design of the MiG-15 took place during 1945-6, the first prototype bearing a marked resemblance to the Focke-Wulf Ta 183 design of the late World War II period, but problems centring around the lack of a satisfactory powerplant were overcome when the UK agreed to supply a number of Rolls-Royce Nene engines to the Soviet Union, these being quickly copied and produced by Klimov.

The MiG-15 prototype made a successful maiden flight in December 1947, and the type was ordered into quantity production during 1948. Deliveries to the Soviet air force began during 1949, and relatively little time was wasted in introducing the type to combat following the North Korean invasion which took place during the summer of 1950. By that time, the improved **MiG-15SD** (more commonly known as the **MiG-15bis**) was in service, whilst a crew-training derivative designated **MiG-15UTI** had also flown. There were many prototypes of other versions, but the basic importance of the MiG-15 was its ability to fly attack and anti-tank missions better than its specialized rivals.

One of the most widely used jet fighters of all time, the MiG-15 was also manufactured in China, Czechoslovakia and Poland in considerable numbers and it is known to have served with close to 30 air arms throughout the world as a front-line fighter and as an advanced trainer. Although now largely obsolescent, it still remains active as a trainer with several air arms.



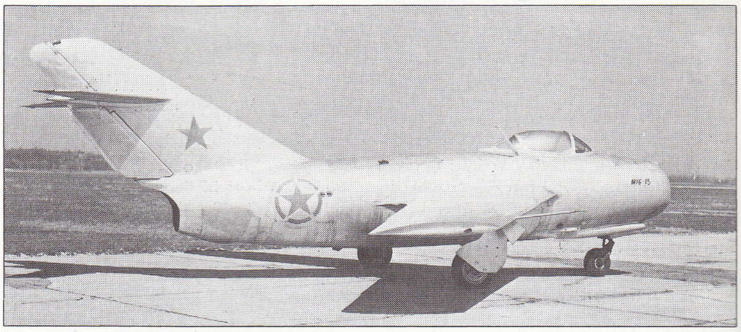
Most MiG-15s that flew over Korea in 1950-3 belonged to the air force of North Korea, though their pilots were not always Korean. The majority, like this example, were left in natural metal finish. Major James Jabara, USAF, said 'I reckon they have a dozen people assigned to polish each MiG.'



First flown in 1947, the MiG-15 was a truly classic design, which at one stroke put the Soviet Union alongside the best Western nations in fighter design. At the highest Mach numbers it still had shortcomings, but in many basic aspects of performance it outflew the F-86. This MiG-15bis is of a Soviet aerobatic team.

Specification

Mikoyan-Gurevich MiG-15bis
Type: single-seat fighter
Powerplant: one 2700-kg (5,952-lb) thrust Klimov VK-1 turbojet
Performance: maximum speed 1100 km/h (684 mph) at 12000 m (39,370 ft); initial climb rate 3500 m (11,800 ft) per minute; service ceiling 15550 m (51,015 ft); ferry range 2000 km (1,242 miles)
Weights: empty 3400 kg (7,495 lb); maximum take-off 5785 kg (12,756 lb)
Dimensions: span 10.08 m (33 ft 0¾ in); length 11.05 m (36 ft 3¼ in); height 3.40 m (11 ft 1¾ in); wing area 20.60 m^2 (221.7 sq ft)
Armament: one 37-mm NR-37 cannon and two 23-mm NR-23 cannon, plus up to 1000 kg (2,205 lb) of external stores



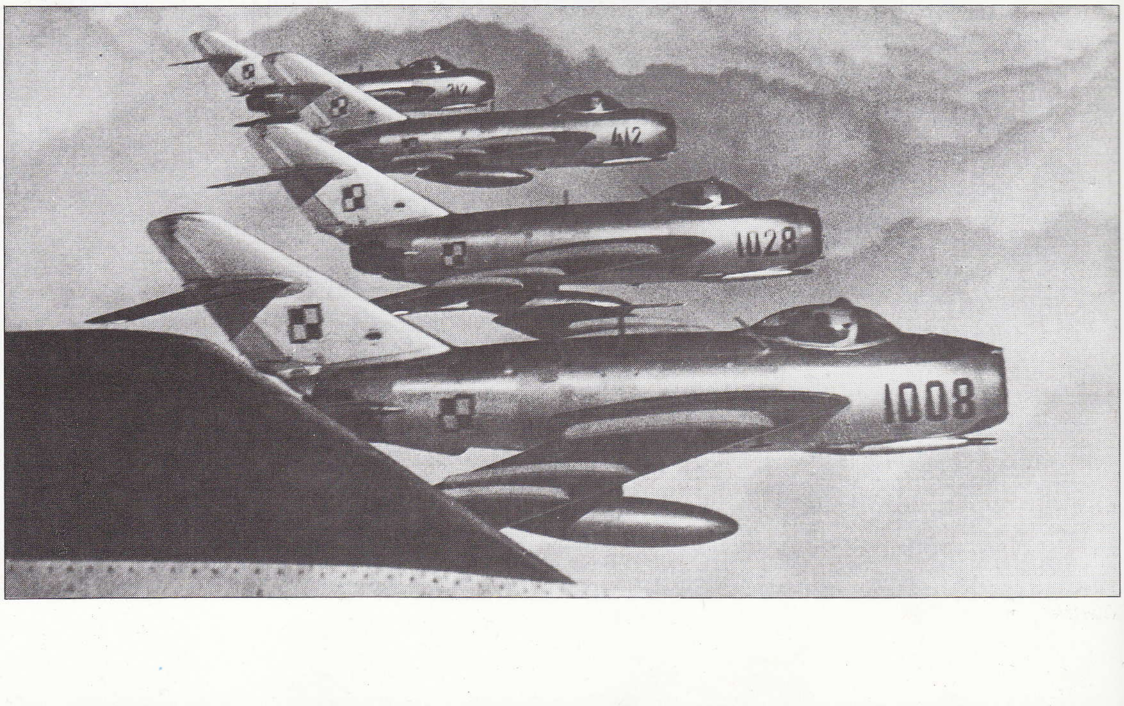
On 21 September 1953 this MiG-15 was flown to Kimpo by a defecting North Korean officer. After prolonged flight testing in USAF markings, with buzz number 616, it was restored with rather inaccurate North Korean insignia, and is still preserved, in the US Air Force Museum.

USSR

Mikoyan-Gurevich MiG-17

Essentially a logical development of the earlier MiG-15 'Fagot' which had given the West such a shock in 1950, the **Mikoyan-Gurevich MiG-17 'Fresco'** still features in the inventories of numerous air arms, although it has largely been relegated to second-line duties such as gunnery and weapons training.

First flown in prototype form during the early 1950s, the MiG-17 entered service as a day interceptor during 1953 and early production specimens used the same Klimov VK-1 engine as the MiG-15, offering maximum thrust of 2740 kg (6,040 lb), although it was fairly soon supplanted by the VK-1F which featured a fairly simple afterburner unit and was rated at 3400-kg (7,495-lb)

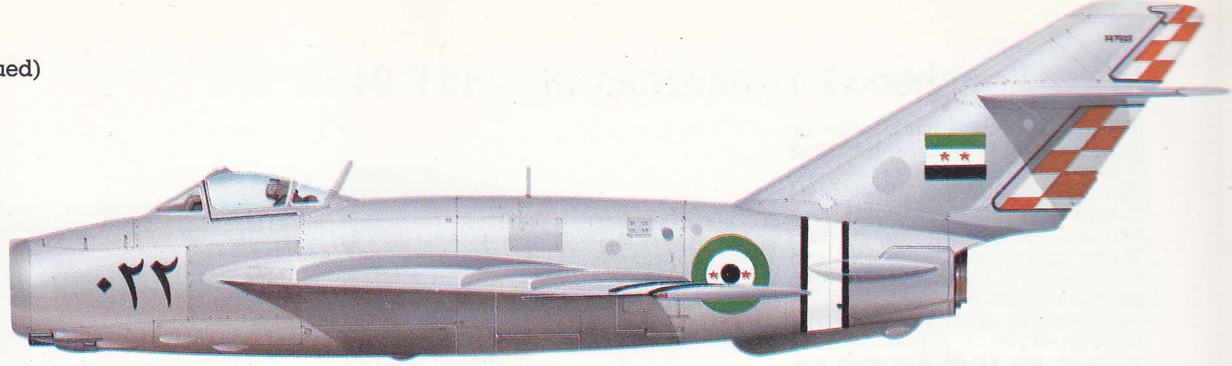


Produced under licence by Polish industry as the LIM-5P, the MiG-17F is seen here in service with that country's Soviet-dominated air force in the late 1950s. The lead company, WSK-PZL-Mielec, also carried out design work on various modified versions, some greatly altered.

thrust. Armament was also basically as on its predecessor, a single Nudelmann 37-mm cannon and a pair of Nudelmann-Richter 23-mm cannon, although later production models employed three of the latter with no 37 mm as well as featuring provision for up to four AA-1 'Alkali' air-to-air missiles.

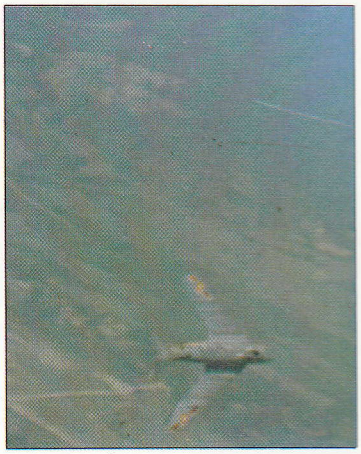
In addition to production in the Soviet Union, the MiG-17 was also manufactured abroad, in Czechoslovakia as the **S-104**, in Poland as the **LIM-5** and **LIM-5P** and in China as the Shenyang **J-5**, the latter nation also developing and building a tandem two-seat variant known as the **J J-5**.

Essentially obsolete by the time of the Vietnam War, the MiG-17 was used extensively by the North Vietnamese and achieved considerable success although it should be pointed out that the rules of engagement adopted by the United States were probably a contributory factor since they inhibited the freedom of action of American pilots by insisting it was necessary to close to within visual range before opening fire.



Bearing the construction number 507022 on the fin (with the last three numbers repeated on the nose in Arabic), this MiG-17F was one of some 2,000 exported to 31 countries – in this case Syria. The MiG-17F was simple to fly and maintain.

Specification
MiG-17F 'Fresco-C'
Type: single-seat fighter
Powerplant: one 3400-kg (7,495-lb) afterburning thrust Klimov VK-1F turbojet
Performance: maximum speed 1145 km/h (711 mph) at 3000 m (9,845 ft); initial climb rate 3900 m (12,795 ft) per minute; service ceiling 16600 m (54,460 ft); range 1470 km (913 miles)
Weights: empty 4100 kg (9,040 lb); maximum take-off 6700 kg (14,770 lb)
Dimensions: span 9.63 m (31 ft 7 in); length 11.09 m (36 ft 4½ in); height 3.35 m (11 ft 0 in); wing area 22.60 m^2 (243.3 sq ft)
Armament: three 23-mm NR-23 cannon, plus four AA-1 'Alkali' missiles or up to 500 kg (1,102 lb) of external stores



A North Vietnamese MiG-17 manoeuvres hard to escape the USAF F-4 Phantom which took this picture. Although not equipped with sophisticated weapons systems, North Vietnamese MiG-17s did score a number of kills.

SWEDEN

Saab-29

Nicknamed **'Tunnan'** (barrel) in reference to its portly external appearance, the **Saab-29** holds the unique position of being the first European-designed swept-wing fighter interceptor to attain quantity production. Flown in prototype form for the first time on 1 September 1948, the initial production model was the **J29A** which began to enter service with the Swedish air force (Flygvapen) during May 1951 at Norrköping.

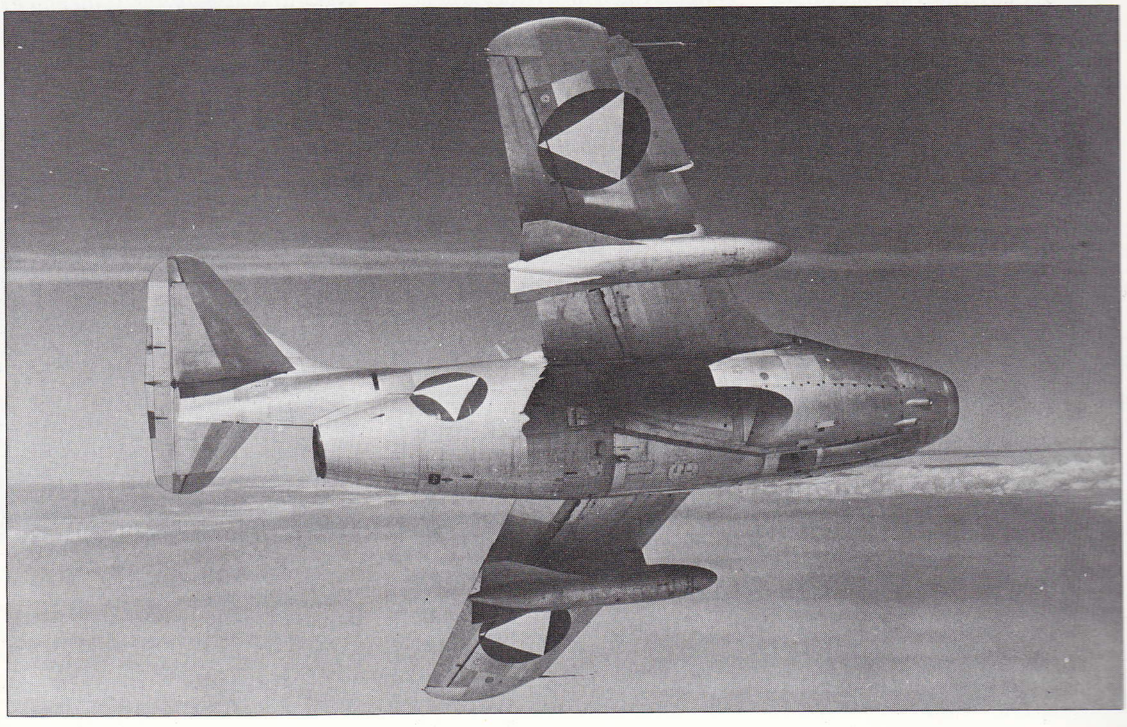
Powered by a single Svenska Flygmotor RM2 turbojet engine (a licence-built version of the de Havilland Ghost) some 200 or so J29As were completed before production switched to the **Saab-29B** which was a multi-mission machine, the interceptor variant being known as the **J29B** whilst a specialized attack derivative had the designation **A29B**, the latter being able to carry a variety of external ordnance including 250-kg (551-lb) general-purpose bombs, unguided air-to-air rockets with additional air-to-ground capability, and napalm.

The third basic member of the family to appear was the **S29C**, which was optimized for reconnaissance tasks with the usual quartet of Hispano 20-mm cannon being replaced by a battery of six automatic cameras. Flown for the first time during June 1953, the S29C subsequently adopted the so-called 'dog-tooth' wing leading edge which bestowed improved transonic handling characteristics.

First fitted to the **Saab-29D** variant, the Swedish-designed afterburner resulted in significantly greater power which in turn led to much improved climb performance, but only a few of this **J29D** subtype were built, it being quickly supplanted by the **J29E** which was the first to feature the 'dog-tooth' leading edge as standard. Both afterburner and 'dog-tooth' were incorporated in the definitive **J29F** which flew in prototype form on 20 March 1954 and which, like the earlier Saab-29B, possessed dual interceptor/attack capability.

By the time production came to an end in spring 1956 no less than 656 aircraft of this basic type had been built, a handful remaining active until the mid-1960s with the Flygvapen whilst about 30 saw service with Austria's small air force as fighter-bomber and reconnaissance aircraft, those operating in the latter role using a detachable pod housing three Vinten cameras.

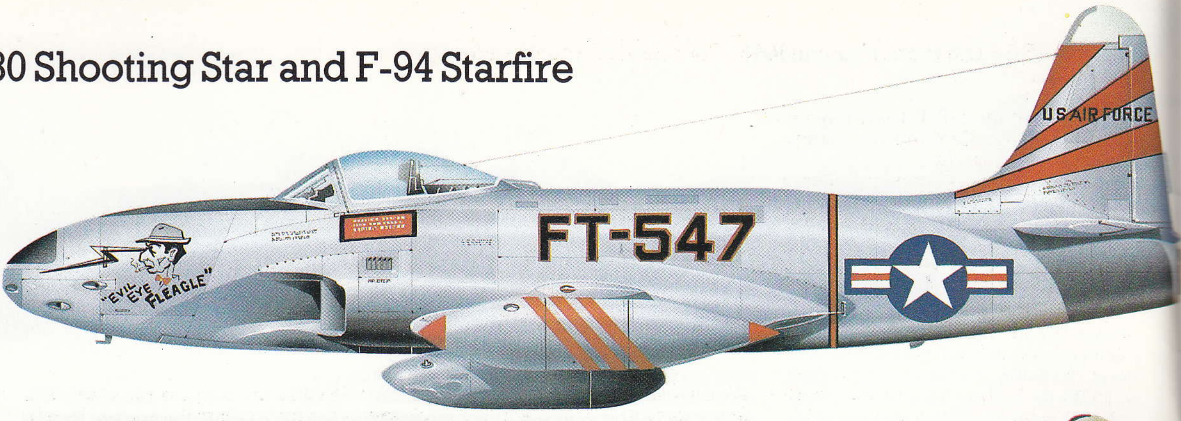
Specification
Saab J29F
Type: single-seat fighter
Powerplant: one 2800-kg (6,173-lb) afterburning thrust Svenska Flygmotor RM2B turbojet
Performance: maximum speed 1060 km/h (659 mph) at 1500 m (4,920 ft); initial climb rate 3600 m (11,810 ft) per minute; service ceiling 15500 m (50,850 ft); ferry range 2700 km (1,678 miles)
Weights: empty 4600 kg (10,141 lb); maximum take-off 8000 kg (17,637 lb)
Dimensions: span 11.00 m (36 ft 1 in); length 10.13 m (33 ft 2½ in); height 3.75 m (12 ft 3½ in); wing area 24.00 m^2 (258.3 sq ft)
Armament: four 20-mm Hispano cannon, plus two Rb324 air-to-air missiles, or 24 75-mm (2.95-in) rockets, or eight 180-mm (7.09-in) or 150-mm (5.9-in) rockets, or two 250-kg (551-lb) bombs



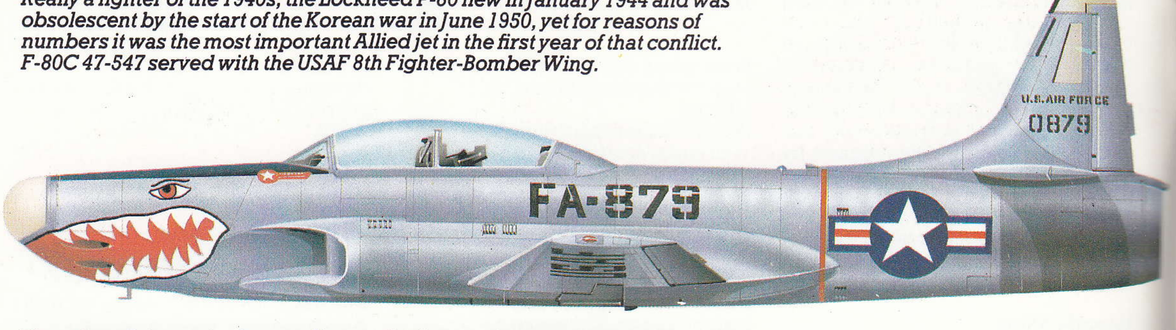
Sweden's outstanding Saab J29 Tunnan (barrel) used the British Ghost engine, locally modified and licence-built. The final J29F version was boosted by an afterburner, and was also improved by its extended-chord outer wings with dogtooth leading edges. This J29F was sold to Austria.

USA

Lockheed F-80 Shooting Star and F-94 Starfire



Really a fighter of the 1940s, the Lockheed P-80 flew in January 1944 and was obsolescent by the start of the Korean war in June 1950, yet for reasons of numbers it was the most important Allied jet in the first year of that conflict. F-80C 47-547 served with the USAF 8th Fighter-Bomber Wing.



First aircraft in service boosted by an afterburner (note the big engine nozzle surround), the Lockheed F-94B Starfire gained many night victories in Korea. One fell to the four old 'fifty calibre' machine-guns of this machine, 50-879, seen here without its large Fletcher wingtip fuel tanks.

Although preceded into service by Bell's P-59A Airacomet, the **Lockheed F-80 Shooting Star** is generally regarded as the first true American jet fighter, evolving in response to a General Operational Requirement issued in mid-June 1943. Design and manufacture of the prototype forged ahead at a quite remarkable pace, the first machine making a successful maiden flight on 8 January 1944 although the **XP-80** was soon discarded in favour of the **XP-80A** which incorporated a rather more powerful and US-produced engine in the shape of the Allison J33.

Ordered into quantity production during April 1944, the Shooting Star subsequently suffered cancellations after VJ-Day, but was proceeded with and as the **P-80A** duly attained operational service with the 412th Fighter Group during 1946, although poor serviceability and a very high accident rate significantly reduced its value. Nevertheless, the Shooting Star made a number of important flights, these including the first west-to-east transatlantic crossing by jet which was accomplished by 16 F-80s of the 56th Fighter Group in July 1948.

The second model to enter production was the **F-80B**, which featured numerous refinements such as thinner wings with thicker skin, more power and provision for rocket launchers. But only 240 of this model were completed before manufacture switched to the definitive **F-80C**. This possessed even greater power and also benefited from better armament, no less than 670 being completed by the end of 1950, by which time the USA was deeply embroiled in the Korean War.

The F-80C saw extensive action in that conflict, one highlight occurring on 8 November 1950 when an F-80C succeeded in downing a MiG-15 in what was believed to be the first conclusive aerial combat between jet fighters. On the whole, though, the Shooting Star possessed inferior performance and was mainly employed as a fighter-bomber.

Another type which was directly descended from the Shooting Star was the **F-94 Starfire** all-weather interceptor. A two-seater, this in fact evolved from the **T-33A** (née **TF-80C**) trainer and was widely used by Air Defense Command, a total of 854 aircraft being built in three different versions. The last and most numerous of these was the **F-94C**, which adopted a different engine and was particularly noteworthy as the first gunless rocket-armed interceptor to enter service.

On active service in Korea, Lockheed F-94B-5 no. 51-5416 runs up its engine to full thrust, the afterburner flame stabbing thunderously into the night and disturbing hundreds of sleepers in nearby tents. For full-load take-offs in summer, JATO rocket bottles were clipped under the fuselage.

Specification
Lockheed F-80C Shooting Star
Type: single-seat fighter-bomber
Powerplant: one 2449-kg (5,400-lb) thrust Allison J33-A-35 turbojet
Performance: maximum speed 956 km/h (594 mph) at sea level; initial climb rate 2094 m (6,870 ft) per minute; service ceiling 13030 m (42,750 ft); range 1706 km (1,060 miles)
Weights: empty 3738 kg (8,240 lb); maximum take-off 7646 kg (16,856 lb)
Dimensions: span 12.15 m (39 ft 10½ in); length 10.52 m (34 ft 6 in); height 3.45 m (11 ft 4 in); wing area 22.02 m^2 (237 sq ft)
Armament: six 12.7-mm (0.5-in) M3 machine-guns, plus up to 907 kg (2,000 lb) of external ordnance or 16 127-mm (5-in) rockets

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USA

Republic F-84F Thunderstreak and RF-84F Thunderflash

The first prototype **Republic XP-84** made its maiden flight on 28 February 1946, powered by a General Electric J35 engine. Dubbed 'Thunderjet', the straight-winged **F-84** saw operational service in Korea from December 1950, first as an escort fighter to B-29 bombers and then in the ground attack role. The **F-84G** was developed to carry nuclear weapons for tactical warfare and was used by TAC and SAC; F-84Gs without nuclear weapon delivery systems were supplied to various NATO air forces and no less than 4,457 straight-wing Thunderjets were built.

Although it shared the same generic designation number as the straight-winged F-84 Thunderjet, the **Republic F-84F Thunderstreak** was essentially a new aircraft and one which for a time served as the backbone of NATO tactical strike forces, operating with Belgium, France, Italy, Greece, the Netherlands, Turkey and West Germany.

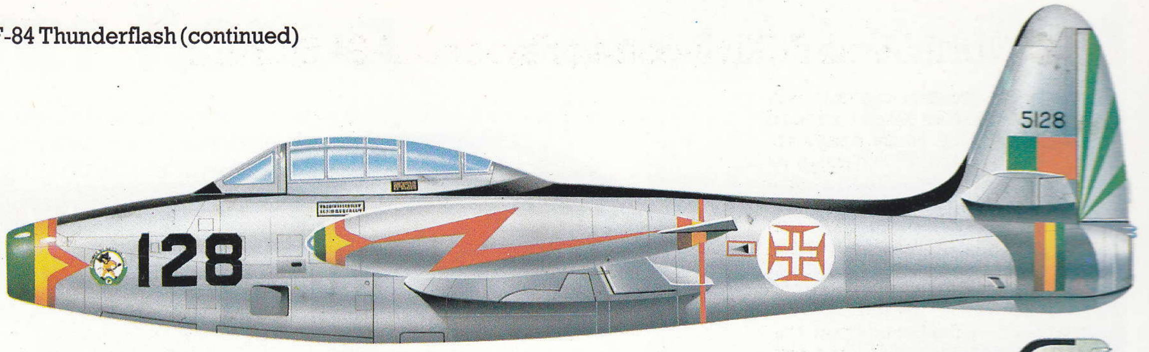
Initially conceived by Republic during 1949, the Thunderstreak was first flown in prototype form as the **YF-84F** in June 1950, this aircraft using a standard F-84E fuselage with a swept wing and being powered by a single Allison YJ35-A-25 engine rated at 2359-kg (5,200-lb) thrust. Early flight testing of this aircraft very quickly revealed that the performance left a great deal to be desired and it was therefore decided to incorporate the British Sapphire (Wright J65) engine, impetus for the change being largely provided by US involvement in the Korean War, although in the event the F-84F did not see action in that conflict. Adoption of the more powerful engine in turn necessitated some redesign and it was not until late 1952 that the first production specimen made its maiden flight, by which time the whole programme was running several months behind schedule. Further difficulties, most of them allied to the powerplant and aircraft subsystems, delayed operational introduction and it was not until Janu-

A Republic F-84B, the first model to see service, of the 49th Fighter Bomber Wing, US Air Force. The F-84B's poor performance, particularly on take-off, gave rise to the nickname 'Ground Hog'.

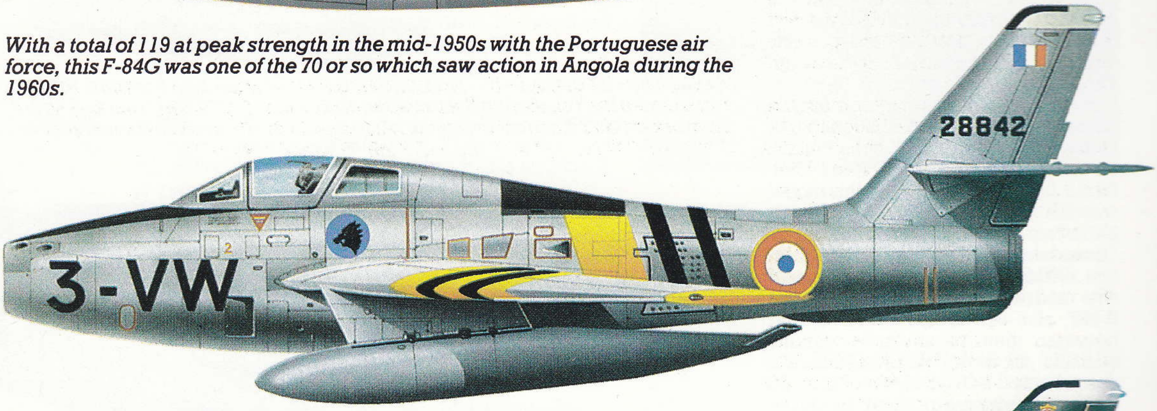
ary 1954 that the F-84F began to join Strategic Air Command's 506th Strategic Fighter Wing.

The early years of service brought further difficulties but these were gradually overcome although the advent of the 'Century Series' meant that the Thunderstreak's USAF career was quite short. Altogether 2,711 F-84Fs were built for service with allied nations from the late 1950s onwards, and some of these remained active until quite recently.

A specialized photo-reconnaissance derivative known as the **RF-84F Thunderflash** was evolved more or less concurrently, this being most easily recognized by its revised air inlet layout which permitted the battery of cameras to be mounted in the extreme nose section. Including the prototype **YRF-84F**, 716 Thunderflashes were built, almost half of this figure being destined for overseas service under the terms of the Mutual Defense Aid Program, examples being supplied to Italy, Greece, West Germany, Turkey, the Netherlands, Belgium, Denmark, Taiwan, France and Norway.

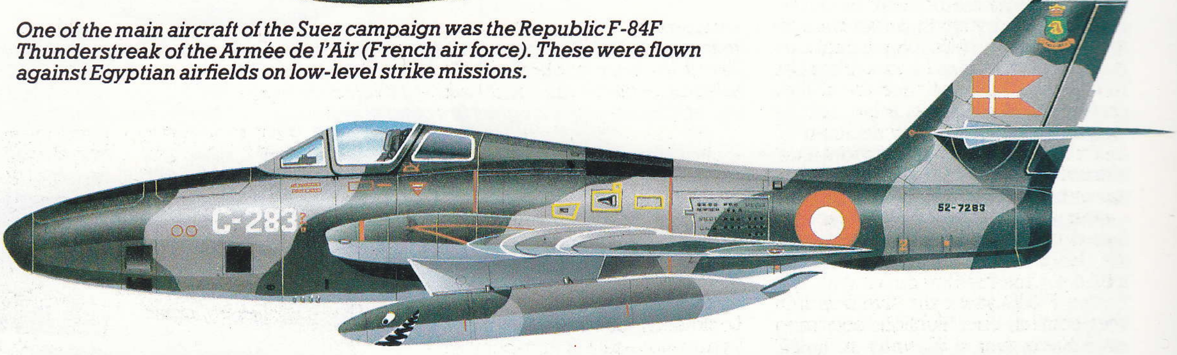


With a total of 119 at peak strength in the mid-1950s with the Portuguese air force, this F-84G was one of the 70 or so which saw action in Angola during the 1960s.



One of the main aircraft of the Suez campaign was the Republic F-84F Thunderstreak of the Armée de l'Air (French air force). These were flown against Egyptian airfields on low-level strike missions.

Specification
Republic F-84F Thunderstreak
Type: single-seat strike fighter
Powerplant: one 3275-kg (7,220-lb) thrust Wright J65-W-3 turbojet
Performance: maximum speed 1118 km/h (695 mph) at sea level; initial climb rate 2499 m (8,200 ft) per minute; service ceiling 14020 m (46,000 ft); combat radius, clean 724 km (450 miles); ferry range 3444 km (2,140 miles)
Weight: maximum take-off 12701 kg (28,000 lb)
Dimensions: span 10.26 m (33 ft 7¼ in); length 13.23 m (43 ft 4¾ in); height 4.39 m (14 ft 4¾ in); wing area 30.19 m^2 (325 sq ft)
Armament: six 12.7-mm (0.5-in) M3 machine-guns, plus 2722 kg (6,000 lb) of external ordnance including bombs, rockets and napalm tanks



A Republic RF-84F Thunderflash of Esk 729, Danish air force, in 1970. The RF-84F carried a battery of cameras in the nose and had its engine intakes relocated in the wing roots.

USA

Northrop F-89 Scorpion

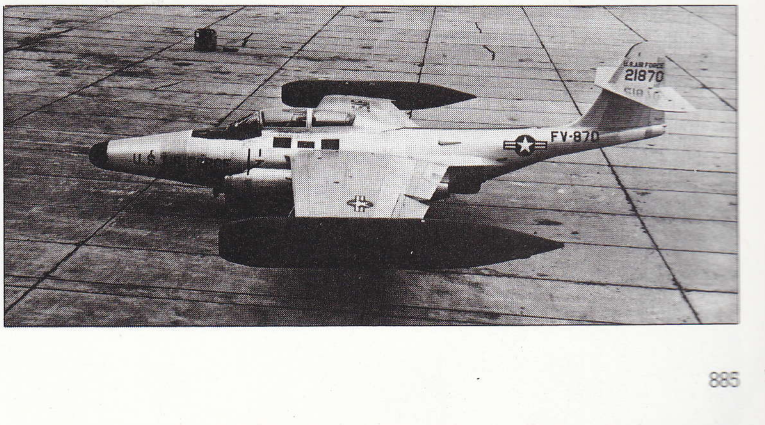
Basic development of the **Northrop F-89 Scorpion** began during 1945 in response to a general requirement issued by the then US Army Air Force calling for an aircraft capable of a speed of 845 km/h (525 mph) at 10670 m (35,000 ft) with a 965-km (600-mile) combat radius and the ability to operate with air-to-air rockets. Although the jet era had already begun, the original requirement called for a propeller-driven aircraft, but most of the six companies which responded submitted proposals based upon the use of jet power. In March of the following year, one of the four Northrop candidates was selected for further development and rewarded with a contract for two **XP-89** prototypes on 13 June 1946, flown for the first time in mid-August 1948. Initial trials revealed few problems, and the type was ordered into production as the **F-89A** in 1949. Soon afterwards, the Scorpion began to run into difficulties, most of which centred around inadequate performance; but there was also serious concern about structural integrity and it was decided to suspend production until Northrop had eradicated these failings. In the event, only 11 examples of the F-89A were completed, most of these being employed on operational trials, and it was the **F-89B** which became the first operational model, entering service at Hamilton AFB, California, in June 1951.

A total of 37 F-89Bs was built before production switched to the essentially-similar **F-89C**. It was at about this time that the Scorpion gained a reputation as 'the world's largest vacuum cleaner', the low-slung engines being prone to damage by objects ingested on take-off and during taxiing; inlet screens helped to overcome this difficulty.

The most numerous sub-type was the **F-89D** with revised engines and improved fire-control and armament systems, no less than 682 being built by March 1956. They were followed by the rather more heavily-armed **F-89H**, almost all of the 156 aircraft of this version being accepted in 1956. Subsequently, 350 of the earlier F-89Ds were fitted with a new fire-control system and revised armament in the form of the Douglas MB-1 Genie missile, these henceforth being known under the designation **F-89J**s. The first nuclear-armed interceptor to make its debut, the F-89J began to enter service at Hamilton in January 1957 but enjoyed only a short front-line career, giving way to more sophisticated interceptors like the McDonnell F-101B, Convair F-102A and Convair F-106A in 1960. Many Scorpions did, however, continue to fly with the Air National Guard until 1968.

Specification
Northrop F-89J Scorpion
Type: two-seat all-weather interceptor
Powerplant: two 3266-kg (7,200-lb) afterburning thrust Allison J35-A-35 turbojets
Performance: maximum speed 958 km/h (595 mph) at 10970 m (36,000 ft); initial climb rate 1573 m (5,160 ft) per minute; service ceiling 15600 m (51,180 ft); maximum range 2720 km (1,690 miles)
Weight: maximum take-off 19319 kg (42,590 lb)
Dimensions: span 18.19 m (59 ft 8 in); length 16.33 m (53 ft 7 in); height 5.36 m (17 ft 7 in); wing area 52.2 m^2 (562 sq ft)
Armament: two MB-1 (AIR-2A) Genie nuclear-tipped rockets and 104 FFAR rockets

The Northrop F-89D Scorpion was a totally new all-weather interceptor packaged inside the same old F-89 airframe. With an enlarged nose containing the Hughes E-6 fire control instead of six cannon, its armament comprised up to 104 FFAR rockets housed in the gigantic tip pods.



USA

North American F-86 Sabre

Arguably the greatest post-war jet fighter by virtue of its MiG-killing exploits in Korea, the **North American F-86 Sabre** remains in limited front-line service today with a handful of air arms whilst it also continues to play a major part in the development of new US weapons, both the US Navy and the US Army using the type as a drone target for missile trials.

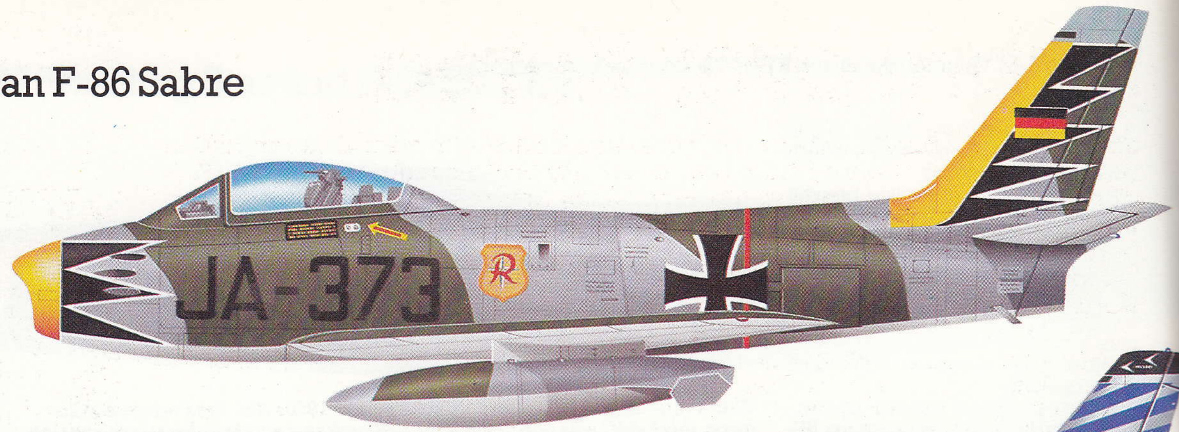
First flown in prototype form on 1 October 1947, the Sabre evolved from an earlier North American product for the US Navy, namely the **FJ Fury**, although the adoption of a swept-wing format at an early stage of development resulted in far superior performance. Production **F-86A** fighters began to enter service with the US Air Force's 1st Fighter Group at March Field, California, in February 1949 and this model was fairly quickly introduced to combat when aircraft of the 4th Fighter Group were despatched to Japan in late 1950 for service in Korea. Successive models, the improved **F-86E** and **F-86F**, also saw action in Korea, and between them these three variants claimed just under 800 MiG-15s at a cost of only 110 Sabres.

The final fighter-bomber model to be produced by North American was the **F-86H**, which incorporated a more powerful J73 engine, a considerably redesigned fuselage, additional fuel capacity and numerous other refinements, but this type was destined to enjoy only a fairly short front-line career, giving way to the F-100C Super Sabre by 1957-8.

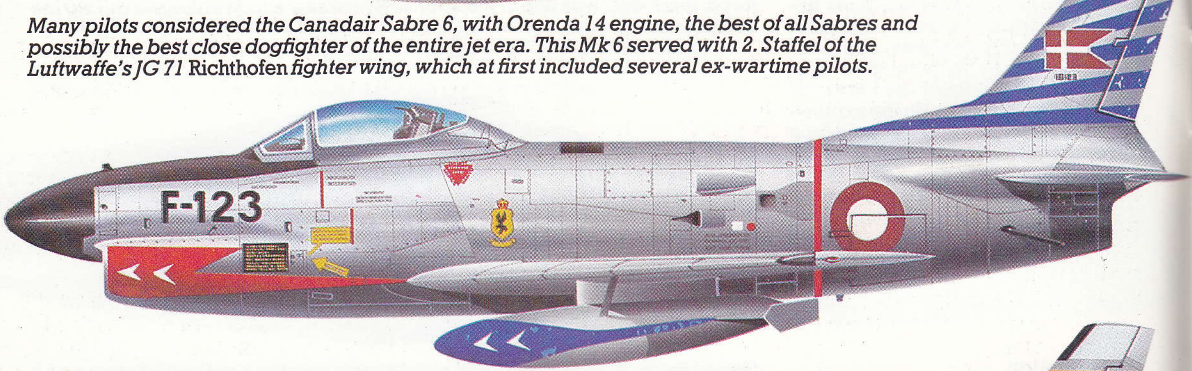
Although best known as a tactical fighter, the most numerous member of the Sabre family was the **F-86D**. Optimized for interceptor duties with Air Defense Command, the F-86D in fact began life as the **F-95**, a virtually new machine in which the only common feature with other variants was the wing. By the standards of the day, the F-86D was a most sophisticated aircraft, incorporating interception radar and an associated fire-control system as well as 24 70-mm (2.75-in) Mighty Mouse rockets housed in a retractable ventral tray. Of the more than 6,000 Sabres built between 1946 and 1955, no less than 2,504 were F-86Ds, the only other new-build model being the **F-86K** for service with NATO air arms, a gun-armed version of the F-86D.

Specification

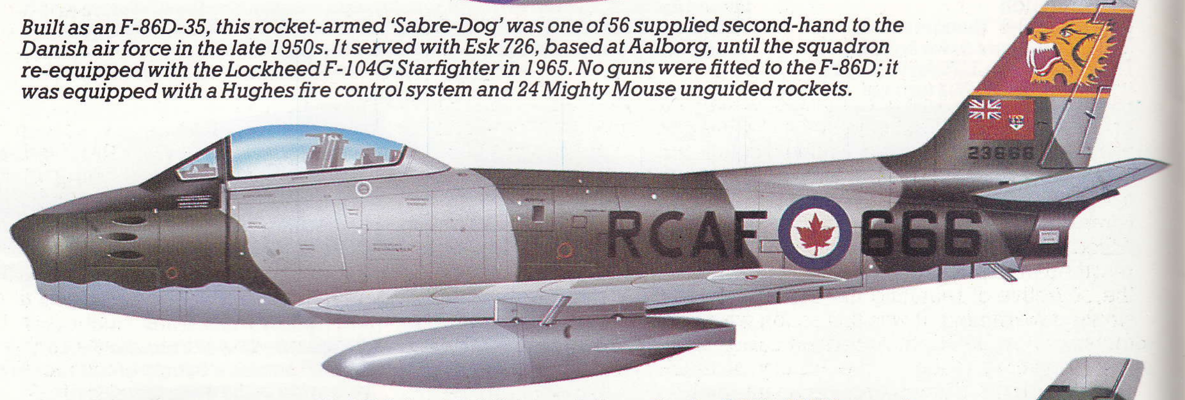
North American F-86H Sabre
Type: single-seat tactical fighter
Powerplant: one 4046-kg (8,920-lb) thrust General Electric J73-GE-3D turbojet
Performance: maximum speed 1114 km/h (692 mph) at sea level; initial climb rate 3932 m (12,900 ft) per minute; service ceiling 15485 m (50,800 ft); range, clean 835 km (519 miles); ferry range 2913 km (1,810 miles)
Weights: empty 6276 kg (13,836 lb); maximum take-off 9912 kg (21,852 lb)
Dimensions: span 11.93 m (39 ft 1½ in); length 11.84 m (38 ft 10 in); height 4.57 m (15 ft 0 in); wing area 29.1 m^2 (313.4 sq ft)
Armament: four 20-mm M39 cannon, plus two 227-kg (500-lb), 340-kg (750-lb) or 454-kg (1,000-lb) bombs, or 16 127-mm (5-in) rockets



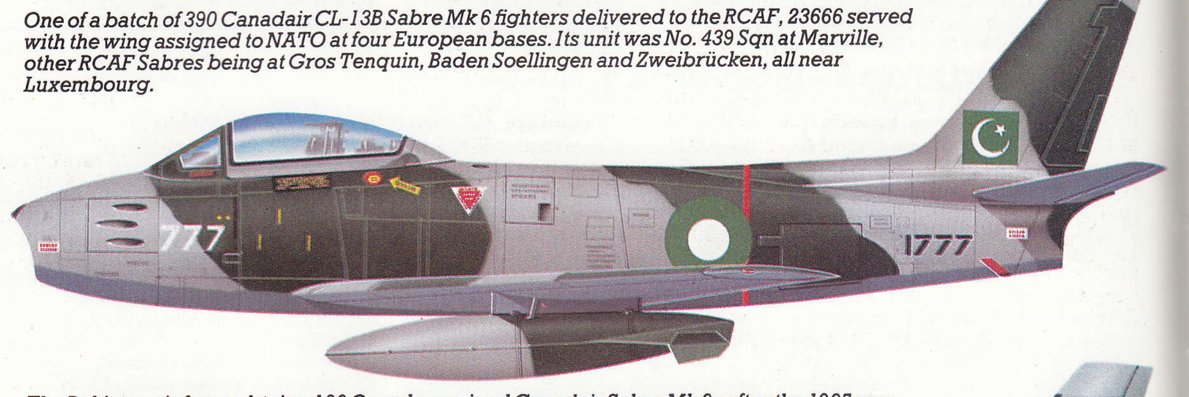
Many pilots considered the Canadair Sabre 6, with Orenda 14 engine, the best of all Sabres and possibly the best close dogfighter of the entire jet era. This Mk 6 served with 2. Staffel of the Luftwaffe's JG 71 Richthofen *fighter wing, which at first included several ex-wartime pilots.*



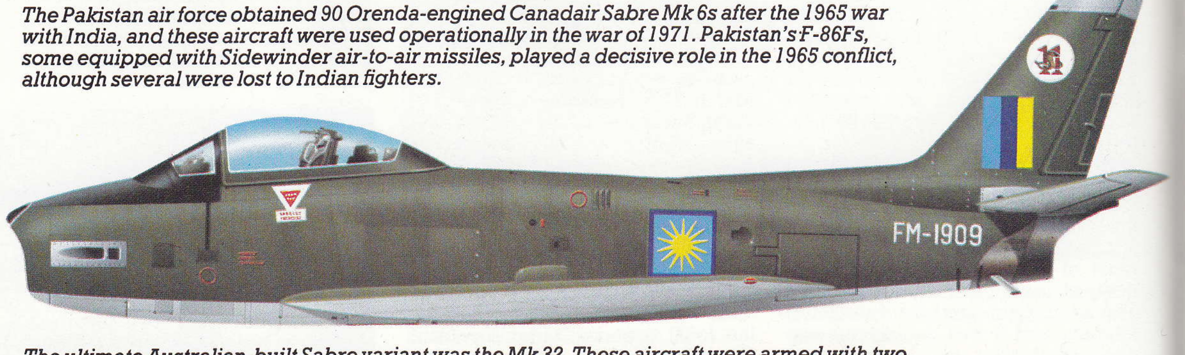
Built as an F-86D-35, this rocket-armed 'Sabre-Dog' was one of 56 supplied second-hand to the Danish air force in the late 1950s. It served with Esk 726, based at Aalborg, until the squadron re-equipped with the Lockheed F-104G Starfighter in 1965. No guns were fitted to the F-86D; it was equipped with a Hughes fire control system and 24 Mighty Mouse unguided rockets.



One of a batch of 390 Canadair CL-13B Sabre Mk 6 fighters delivered to the RCAF, 23666 served with the wing assigned to NATO at four European bases. Its unit was No. 439 Sqn at Marville, other RCAF Sabres being at Gros Tenquin, Baden Soellingen and Zweibrücken, all near Luxembourg.



The Pakistan air force obtained 90 Orenda-engined Canadair Sabre Mk 6s after the 1965 war with India, and these aircraft were used operationally in the war of 1971. Pakistan's F-86Fs, some equipped with Sidewinder air-to-air missiles, played a decisive role in the 1965 conflict, although several were lost to Indian fighters.



The ultimate Australian-built Sabre variant was the Mk 32. These aircraft were armed with two 30-mm Aden cannon in place of the standard Sabre armament of six machine-guns, as well as having a higher-thrust, lighter-weight engine, the Rolls-Royce Avon. This aircraft is one of 16 delivered to the Royal Malaysian air force between 1969 and 1971.

Sabre over Korea

Still in service in small numbers, the Sabre has seen action in many theatres. Its first real test was Korea, where it fought and eventually beat the redoubtable MiG-15. The Sabre was the most advanced aircraft deployed in that war by the US Air Force, and it accounted for a claimed 780 MiGs, although the quality of its pilots was of enormous importance. The Sabre went on to be used operationally by the Nationalist Chinese air force and the Pakistan air force, amongst others, but it was in Korea that the Sabre became a legend.

Four F-86Fs of the 51st Fighter Interceptor Wing, based at K-13 (Suwon), fly an operational patrol during the Korean War. The F-86F was produced with the 'hard' or unslatted wing to reduce the MiG-15's slight edge in high-altitude combat.

At the start of the Korean War in June 1950 the United States Air Force was actually at its lowest ebb with regard to overall strength since 1941. A substantial proportion of the operational inventory was made up of largely obsolescent types and although modernization was being accomplished slowly, most of the new equipment due to come on line in the near future took the form of bomber aircraft for the Strategic Air Command. Events in Korea provided the much-needed impetus also to improve tactical capability, but when North Korean forces crossed the 38th Parallel on 25 June 1950 the Far East Air Force (FEAF), whose zone of operations encompassed Korea, was in a particularly sorry state, the most modern equipment on hand being the Lockheed F-80C Shooting Star.

During the opening phase of the war, fortunately, North Korea's air force was even less well equipped with the result that most of the initial aerial skirmishes went pretty much the way of the Americans and, indeed, enemy air power was soon all but eliminated. By the end of September, the United Nations' counteroffensive had driven North Korean troops back across the border and the South Korean government had been reinstated in Seoul; but the Allied powers were not content to let matters rest there and pressed on into North Korea with the objective of reuniting the country under a single government. It was this action which set the stage for the North American Sabre to secure a lasting place in the history of aerial warfare, for the Chinese very soon intervened on behalf of the North Koreans.

On 1 November 1950, the Mikoyan-Gurevich MiG-15 made its combat debut with an attack on a flight of North American F-51 Mustangs but the brief incident was inconclusive, unlike the first all-jet fight which occurred exactly a week later, on 8 November, when four F-80Cs of the USAF's 51st Fighter Interceptor Wing were engaged in a raid on some anti-aircraft artillery positions at Sinuiju airfield. On this occasion, a similar number of MiG-15s crossed the border but encroached too deeply into Korea with the result that the F-80Cs were able to head off their retreat. In the ensuing brief mêlée Lieutenant Russell Brown carved for himself a niche in history when he succeeded in shooting down one of the MiG-15s. On succeeding days, however, the Chinese more than evened the score by destroying two Boeing B-29s and badly damaging three more.

Clearly, the hour had come for modern jet fighters to ride shotgun over the FEAF B-29 bomber force and the USAF wasted little time in deploying Sabres to the combat zone, F-86As of the 4th FIW staging to North Island Naval Air Station, California, where they were loaded aboard two ships for transit to Japan, subsequently setting up a rear echelon at Johnson Air Base near Tokyo on 13 December.

Sabre into action

The Sabre entered combat from the forward base at Kimpo in Korea on 17 December, and wasted no time in opening its account, a brief skirmish between four Sabres and four MiG-15s enabling Lieutenant Colonel Bruce Hinton of the 336th Fighter Squadron to shoot one down, the first of hundreds of MiG-15s to fall foul of the Sabre in little more than 30 months. The tide of battle did not always go in favour of the Americans, however, as evidenced by the destruction of an F-86A on 22 December, although this was avenged within five hours when no less than six of a group of more than 15 MiG-15s were downed in a furious combat. Less than two weeks later, the 4th FIW had to withdraw to Japan following a major North Korean offensive and the first two months of 1951 were fairly quiet as far as the F-86 was concerned.

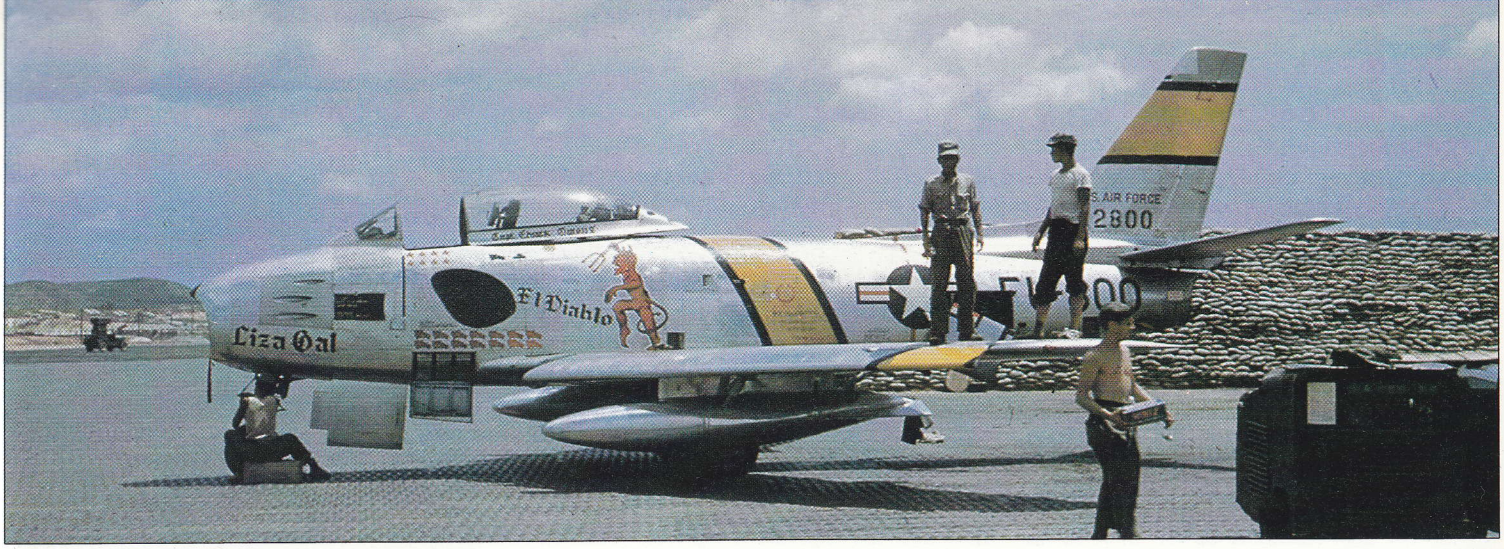
Aerial combat was renewed in earnest during March 1951, but early encounters were mostly inconclusive and it was not until the following month that the tally of destroyed MiG-15s began to mount, 14 aircraft falling to the Sabre. On 20 May Captain James Jabara achieved a rare distinction when he became the world's first jet ace by downing his fifth and sixth MiG-15s in an aerial battle between 36 Sabres and 50 MiG-15s. By the end of 1951, the superiority of the F-86A and its American pilots was plain for all to see, no less than 130 MiG-15s having been claimed at a cost of just 24 Sabres lost in combat.

Thus far, the F-86A had borne the brunt of aerial combat in Korea, but in September 1951, the F-86E model entered the fray, this variant being identical to the F-86A apart from the adoption of an 'all-flying' horizontal tailplane which bestowed better handling qualities. Once again, the 4th FIW introduced this model to combat, although the transition was accomplished at a painfully slow rate and it was not until July 1952 that the last F-86A left. Coincidental with the 4th FIW's conversion, a second F-86E unit had arrived in Korea, the 51st FIW which began operations from Suwon on 1 December 1951 and soon began to accumulate an impressive score-card.

These two fighter wings were the only Sabre units active in Korea in 1952, and during the

A rare colour photograph taken in Korea with the 4th Fighter Group, the aircraft being F-86E-10 Sabres. Ground electric power is connected to one aircraft ready for an immediate start; today USAF fighters have to be able to start without any assistance from external sources.

FU-272
12769
FU-769



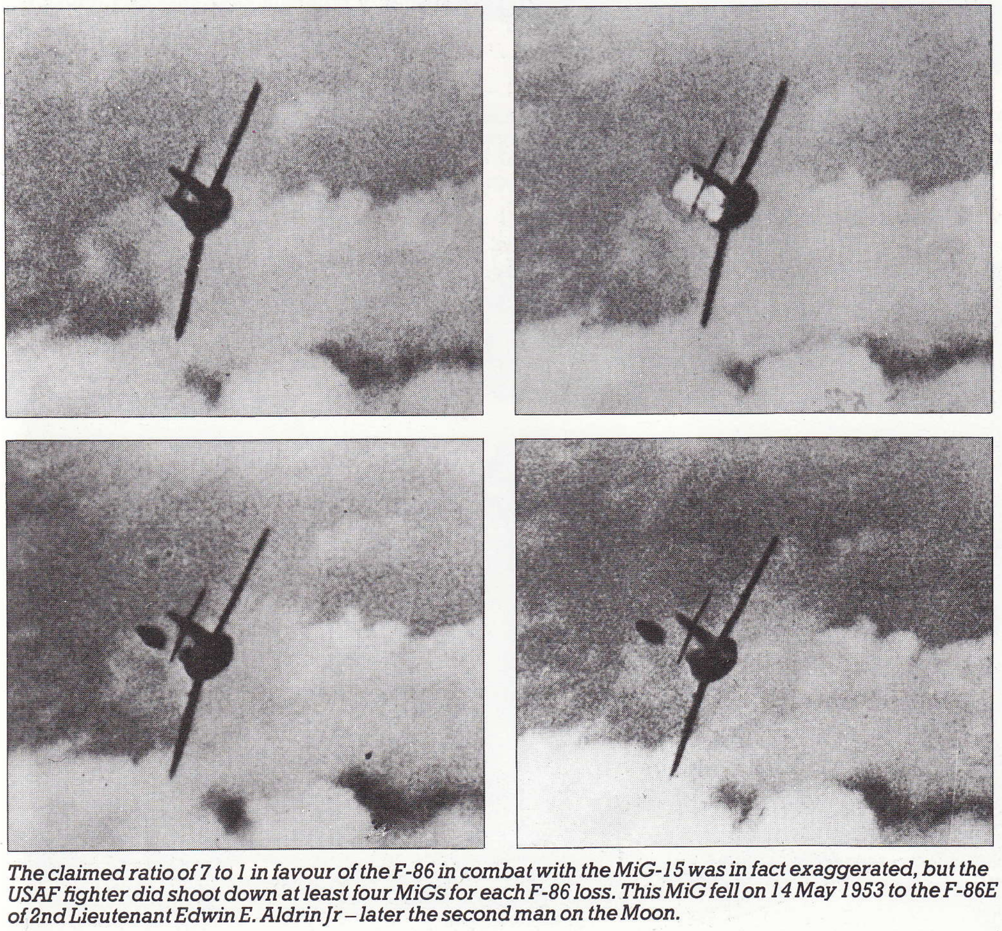
Acres of PSP (pierced-steel planking) were laid to provide Korean airbases with all-weather surfaces. This is Kimpo, and the F-86E comes from the 335th FS of the famed 4th Fighter Group – top-scorers on P-51s in World War II and in Korea credited with 506 MiG-15s (the true figure was lower).

latter half of that year both began to receive the more capable F-86F, this variant possessing rather more power as a result of the switch to the J47-GE-27 engine; some also had extended leading edges, which greatly improved combat handling especially at high altitude and high Mach numbers.

The advent of new more capable variants of the Sabre (and the availability of a second fully-equipped wing) resulted in even greater success, no less than 375 MiG-15s being claimed as destroyed in 1952. Some measure of the Sabre's superiority can be gleaned from the fact that only 53 F-86s were lost to enemy action during the same period.

The remaining seven months of the Korean War were, if anything, even more spectacular, an additional 287 MiG-15s being claimed for the loss of just 33 Sabres. The principal reason for this much-improved kill-rate was the introduction of two more Sabre wings to the combat zone. First to appear (at Osan) was the 18th Fighter-Bomber Wing, which surrendered F-51 Mustangs for the F-86F-30 model in January and this scored its initial MiG kill on its first patrol over the Yalu River on 25 February. Although intended to operate mainly as fighter-bombers, 18th FBW Sabres did frequently encounter MiG-15s in aerial combat, as did the next wing to convert, the Suwon-based 8th FBW, formerly equipped with the F-80C. Transition began in February, with elements of the wing returning to battle in the Sabre on 8 April. Again, the F-86F-30s attached to the 9th FBW were principally employed as bombers, but did not hesitate to 'mix it' with the MiG-15s whenever the opportunity arose.

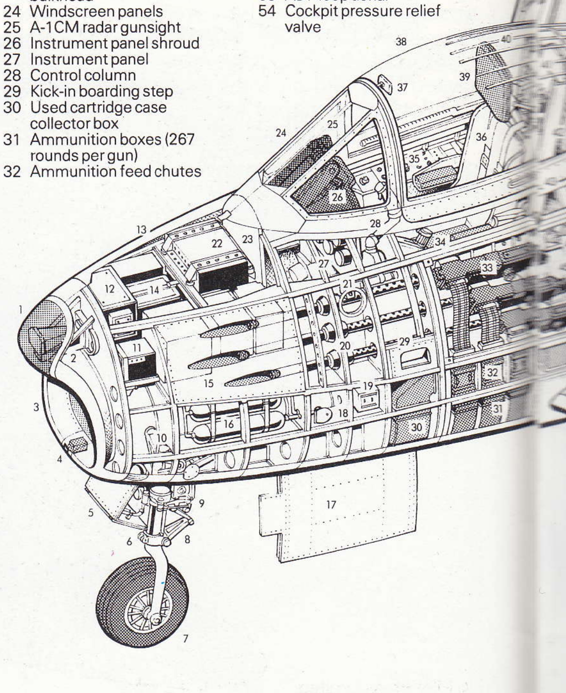
Aerial engagements in the opening quarter of 1953 resulted in an average of 31 MiG-15s claimed as destroyed in each month, and provided little indication of the intense battles which were to come during May and June. The first of these two months was perhaps more significant for the low Sabre loss rate, only one F-86 falling victim to a MiG-15 whilst no less than 56 enemy aircraft were claimed as des-



The claimed ratio of 7 to 1 in favour of the F-86 in combat with the MiG-15 was in fact exaggerated, but the USAF fighter did shoot down at least four MiGs for each F-86 loss. This MiG fell on 14 May 1953 to the F-86E of 2nd Lieutenant Edwin E. Aldrin Jr – later the second man on the Moon.

North American F-86E cutaway draw

1 Radome
2 Radar antenna
3 Engine air intake
4 Gun camera
5 Nosewheel leg doors
6 Nose undercarriage leg strut
7 Nosewheel
8 Torque scissor links
9 Steering control valve
10 Nose undercarriage pivot fixing
11 Sight amplifier
12 Radio and electronics equipment bay
13 Electronics bay access panel
14 Battery
15 Gun muzzle blast troughs
16 Oxygen bottles
17 Nosewheel bay door
18 Oxygen servicing point
19 Canopy switches
20 Machine-gun barrel mountings
21 Hydraulic system test connections
22 Radio transmitter
23 Cockpit armoured bulkhead
24 Windscreen panels
25 A-1CM radar gunsight
26 Instrument panel shroud
27 Instrument panel
28 Control column
29 Kick-in boarding step
30 Used cartridge case collector box
31 Ammunition boxes (267 rounds per gun)
32 Ammunition feed chutes
33 0.5-in (12.7-mm) Colt-Browning machine-guns
34 Engine throttle
35 Starboard side console panel
36 North American ejection seat
37 Rear view mirror
38 Sliding cockpit canopy cover
39 Ejection seat headrest
40 ADF sense aerials
41 Pilot's back armour
42 Ejection seat guide rails
43 Canopy handle
44 Cockpit pressure valves
45 Armoured side panels
46 Tailplane trim actuator
47 Fuselage/front spar main frame
48 Forward fuselage fuel tank (total internal fuel capacity 434.4 US gal/1644 litres)
49 Fuselage lower longeron
50 Intake trunking
51 Rear radio and electronics bay
52 Canopy emergency release handle
53 ADF loop aerial
54 Cockpit pressure relief valve



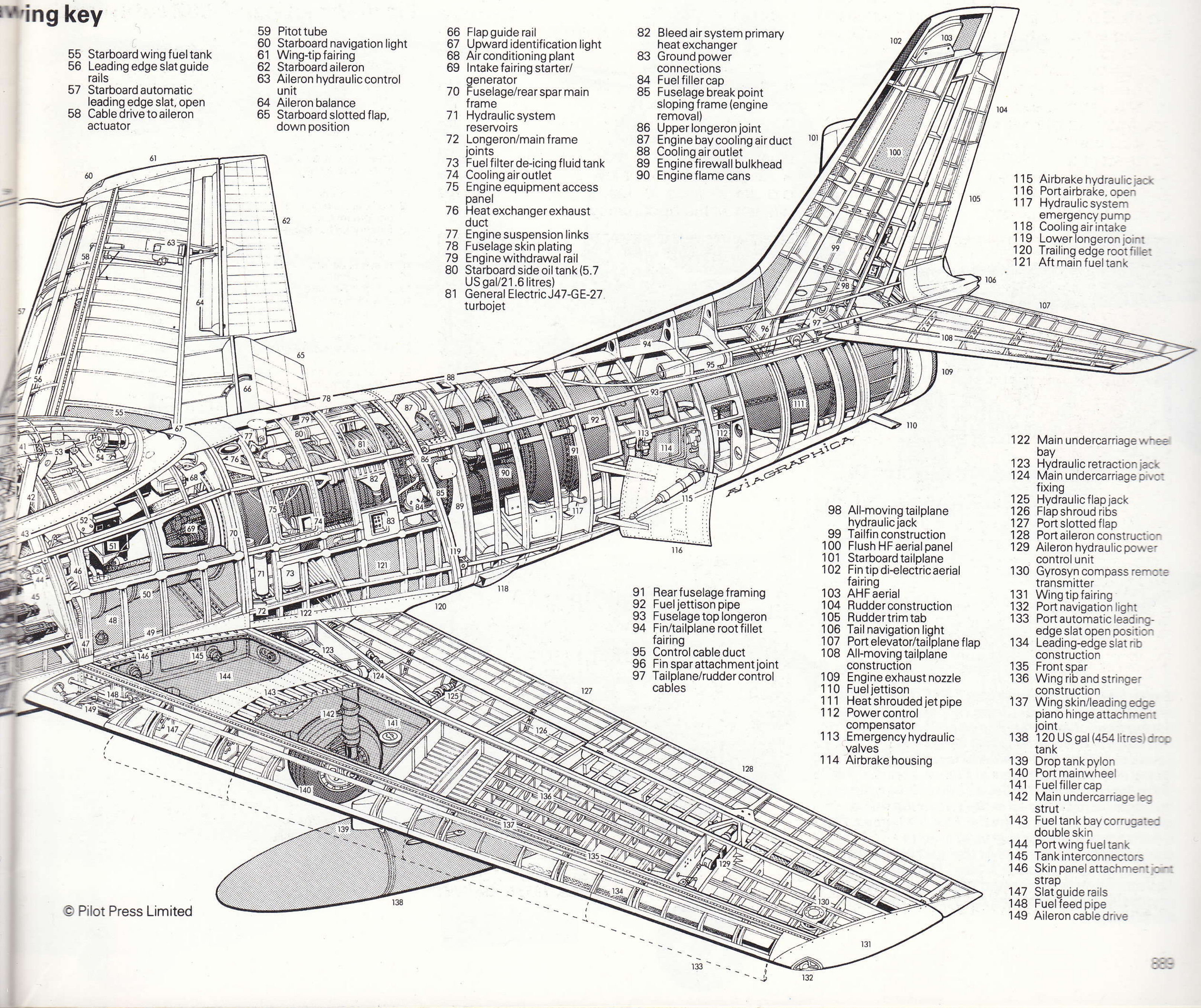
troyed. As far as MiG kills were concerned June was even better, 77 being racked up by the Sabres, although the loss ratio was by no means as satisfactory, 14 F-86s going down over the same period.

Combat between the Sabre and the MiG-15 came to an end on 22 July, when Lieutenant Sam Young of the 51st FIW got his only kill of the Korean War, whilst the last aircraft to be destroyed by an F-86 in Korea was the Ilyushin Il-12 transport that was brought down by Captain Ralph Parr on 27 July. Just a few hours later, the ceasefire went into effect bringing three years of war to an end. Active for much of the conflict, the Sabre ended the war in a position of almost unchallenged superiority, having claimed no less than 780 MiG-15s at a cost of just 110 aircraft, achieving a kill-to-loss ratio in excess of seven-to-one.

The only British Commonwealth country able to tangle with MiGs on an equal footing was South Africa, whose No. 2 Sqn at Osan put up a fine record with its 22 F-86F-30s. Their Sabres were returned to the USAF and passed on to Spain, the SAAF buying Sabre Mk 6s.

wing key

55 Starboard wing fuel tank
56 Leading edge slat guide rails
57 Starboard automatic leading edge slat, open
58 Cable drive to aileron actuator
59 Pitot tube
60 Starboard navigation light
61 Wing-tip fairing
62 Starboard aileron
63 Aileron hydraulic control unit
64 Aileron balance
65 Starboard slotted flap, down position
66 Flap guide rail
67 Upward identification light
68 Air conditioning plant
69 Intake fairing starter/generator
70 Fuselage/rear spar main frame
71 Hydraulic system reservoirs
72 Longeron/main frame joints
73 Fuel filter de-icing fluid tank
74 Cooling air outlet
75 Engine equipment access panel
76 Heat exchanger exhaust duct
77 Engine suspension links
78 Fuselage skin plating
79 Engine withdrawal rail
80 Starboard side oil tank (5.7 US gal/21.6 litres)
81 General Electric J47-GE-27 turbojet
82 Bleed air system primary heat exchanger
83 Ground power connections
84 Fuel filler cap
85 Fuselage break point sloping frame (engine removal)
86 Upper longeron joint
87 Engine bay cooling air duct
88 Cooling air outlet
89 Engine firewall bulkhead
90 Engine flame cans
91 Rear fuselage framing
92 Fuel jettison pipe
93 Fuselage top longeron
94 Fin/tailplane root fillet fairing
95 Control cable duct
96 Fin spar attachment joint
97 Tailplane/rudder control cables
98 All-moving tailplane hydraulic jack
99 Tailfin construction
100 Flush HF aerial panel
101 Starboard tailplane
102 Fin tip di-electric aerial fairing
103 AHF aerial
104 Rudder construction
105 Rudder trim tab
106 Tail navigation light
107 Port elevator/tailplane flap
108 All-moving tailplane construction
109 Engine exhaust nozzle
110 Fuel jettison
111 Heat shrouded jet pipe
112 Power control compensator
113 Emergency hydraulic valves
114 Airbrake housing
115 Airbrake hydraulic jack
116 Port airbrake, open
117 Hydraulic system emergency pump
118 Cooling air intake
119 Lower longeron joint
120 Trailing edge root fillet
121 Aft main fuel tank
122 Main undercarriage wheel bay
123 Hydraulic retraction jack
124 Main undercarriage pivot fixing
125 Hydraulic flap jack
126 Flap shroud ribs
127 Port slotted flap
128 Port aileron construction
129 Aileron hydraulic power control unit
130 Gyrosyn compass remote transmitter
131 Wing tip fairing
132 Port navigation light
133 Port automatic leading-edge slat open position
134 Leading-edge slat rib construction
135 Front spar
136 Wing rib and stringer construction
137 Wing skin/leading edge piano hinge attachment joint
138 120 US gal (454 litres) drop tank
139 Drop tank pylon
140 Port mainwheel
141 Fuel filler cap
142 Main undercarriage leg strut
143 Fuel tank bay corrugated double skin
144 Port wing fuel tank
145 Tank interconnectors
146 Skin panel attachment joint strap
147 Slat guide rails
148 Fuel feed pipe
149 Aileron cable drive



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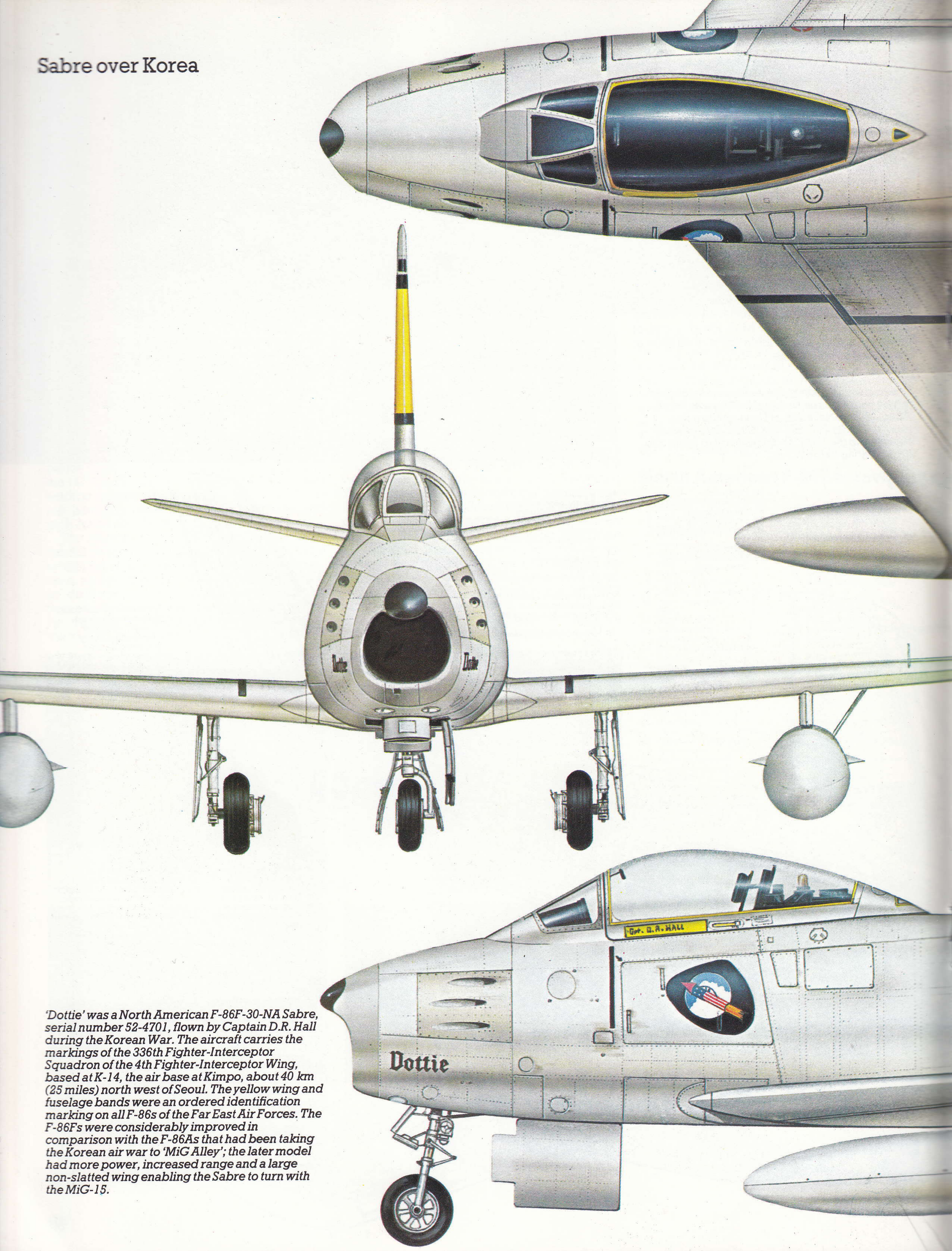
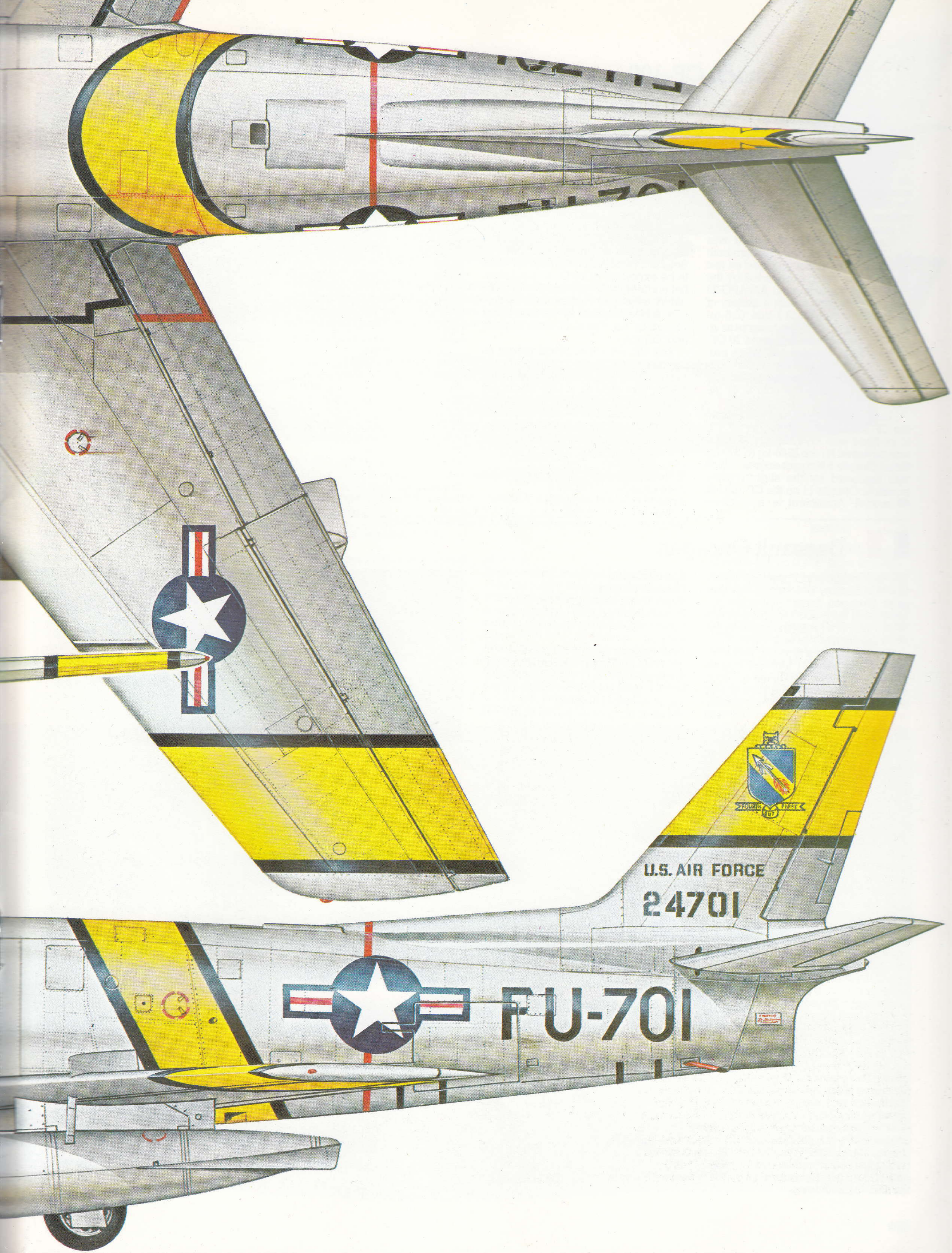
Sabre over Korea



'Dottie' was a North American F-86F-30-NA Sabre, serial number 52-4701, flown by Captain D.R. Hall during the Korean War. The aircraft carries the markings of the 336th Fighter-Interceptor Squadron of the 4th Fighter-Interceptor Wing, based at K-14, the air base at Kimpo, about 40 km (25 miles) north west of Seoul. The yellow wing and fuselage bands were an ordered identification marking on all F-86s of the Far East Air Forces. The F-86Fs were considerably improved in comparison with the F-86As that had been taking the Korean air war to 'MiG Alley'; the later model had more power, increased range and a large non-slatted wing enabling the Sabre to turn with the MiG-15.


U.S. AIR FORCE
24701
FU-701
FOURTH BUT FIRST

CANADA

Avro Canada CF-100

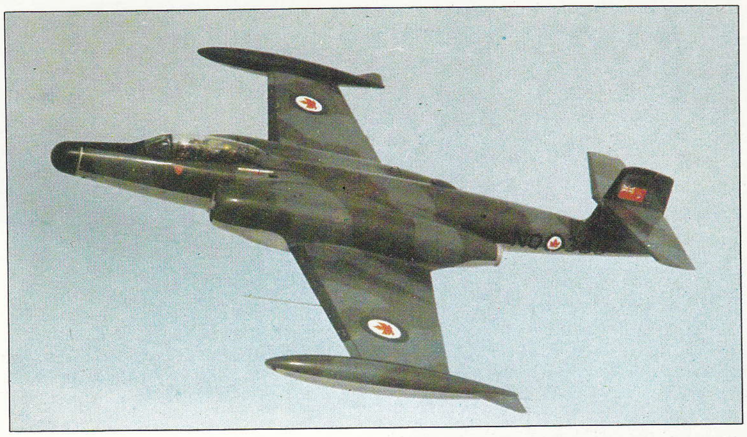
Used in small numbers in the electronic warfare training role by the Canadian Armed Forces until quite recently, the **Avro Canada CF-100** is unique in being the only indigenous jet fighter to attain quantity production in Canada. Development in fact got under way soon after the end of World War II with the first of two **CF-100 Mk 1** prototypes making a successful maiden flight on 19 January 1950.

The initial production variant was the **CF-100 Mk 2**, but only 10 were built and most were in fact engaged on test duties, these being succeeded by the **CF-100 Mk 3** which used AN/APG-33 radar in conjunction with a battery of no less than eight 12.7-mm (0.5-in) machine-guns. Intended to serve as an all-weather/night fighter, some 70 CF-100 Mk 3s were completed before production switched to the definitive **CF-100 Mk 4**, some 510 aircraft of this type being built during the course of the 1950s.

Unofficially known as the **Canuck**, the **CF-100 Mk 4A** was the first CF-100 to be fitted with AN/APG-40 radar and was powered by the 2948-kg (6,500-lb) thrust Orenda 9 turbojet engine, which was replaced by the slightly more powerful Orenda 11 on the **CF-100 Mk 4B** model. Armament in both cases took the form of eight 12.7-mm (0.5-in) machine-guns backed-up by 104 70-mm (2.75-in) rockets carried in the distinctive wing-tip pods.

The final sub-type was the **CF-100 Mk 5**, which featured an extended wing span and updated equipment although it was rather lighter for it lacked the machine-guns of earlier variants, relying solely on rockets in its task of interception. New-build production of the CF-100 Mk 5 totalled 100 aircraft, 53 of which were supplied to Belgium, these being the only CF-100s to be exported. In addition, a substantial number of CF-100 Mk 4s were updated to the later configuration for service with squadrons of the then Royal Canadian Air Force in both Canada and Europe.

The CF-100's operational career as an interceptor came to an end in the early 1960s, but a few aircraft were further modified to act as 'electronic aggressors' in evaluating the performance of Canada's defences. Known as **CF-100 Mk 5C** and **CF-100 Mk 5D** aircraft, these were finally retired by No. 414 Squadron in late 1981.



The Avro Canada CF-100, powered by two locally produced Orenda engines, was both the first and last jet fighter designed and built in quantity in Canada. A superb long-range all-weather interceptor, the Mk 4 version shown had a Hughes collision-course fire control.

Specification
Avro Canada CF-100 Mk 5

Type: two-seat all-weather fighter

Powerplant: two 3300-kg (7,275-lb) thrust Orenda 11 turbojets

Performance: maximum speed 1046 km/h (650 mph) at 3050 m (10,000 ft); initial climb rate 2591 m (8,500 ft) per minute; service ceiling 16460 m (54,000 ft); combat radius 1046 km (650 miles)

Weights: empty 10478 kg (23,100 lb); maximum take-off 16330 kg (36,000 lb)

Dimensions: span 18.54 m (60 ft 10 in); length 16.1 m (54 ft 2 in); height 4.42 m (14 ft 6 in); wing area 54.9 m^2 (591 sq ft)

Armament: 104 70-mm (2.75-in) rockets in two wingtip pods

FRANCE

Dassault Ouragan

The first indigenous French jet fighter to attain quantity production, the **Dassault Ouragan** began full-scale development fairly soon after the end of World War II, a prototype flying for the first time on 28 February 1949.

Powered by a single licence-produced Nene 104 turbojet engine, the Ouragan was produced in fairly substantial numbers (352 aircraft) for the Armée de l'Air, with which it mainly served as a fighter-bomber until supplanted by the Dassault Mystère IVA in the later 1950s. The type also achieved some success on the export market, 104 being supplied to India and 75 to Israel, some aircraft remaining active with the latter air arm until well into the 1960s.

By the standards of the day, the Ouragan was a somewhat sedate performer, but it was nevertheless a significant aircraft for it heralded the resurgence of France as a major manufacturer of combat aircraft, paving the way for the Mystère and Super Mystère which followed.

With regard to armament, the Ouragan packed a fairly powerful punch, featuring a battery of four Hispano 20-mm cannon fitted internally whilst it could also carry up to 1000 kg (2,205 lb) of external ordnance such as conventional iron bombs, rocket packs and napalm canisters.

Specification
Dassault Ouragan

Type: single-seat fighter-bomber

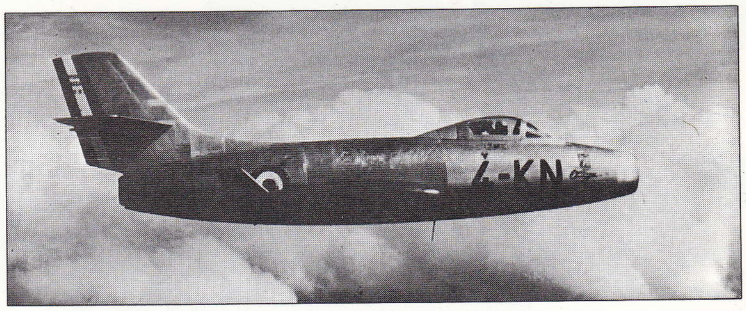
Powerplant: one 2300-kg (5,071-lb) thrust Hispano-Suiza Nene Mk 104B turbojet

Performance: maximum speed 940 km/h (584 mph) at sea level; initial climb rate 2400 m (7,874 ft) per minute; service ceiling 15000 m (49,215 ft); range 920 km (572 miles)

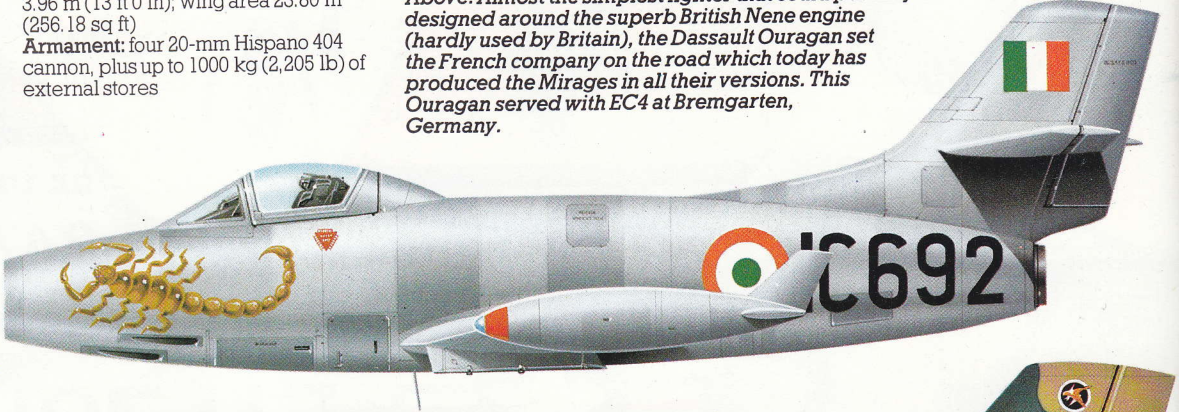
Weights: empty 4140 kg (9,127 lb); maximum take-off 6800 kg (14,991 lb)

Dimensions: span 12.28 m (40 ft 3½ in); length 10.73 m (35 ft 2¼ in); height 3.96 m (13 ft 0 in); wing area 23.80 m^2 (256.18 sq ft)

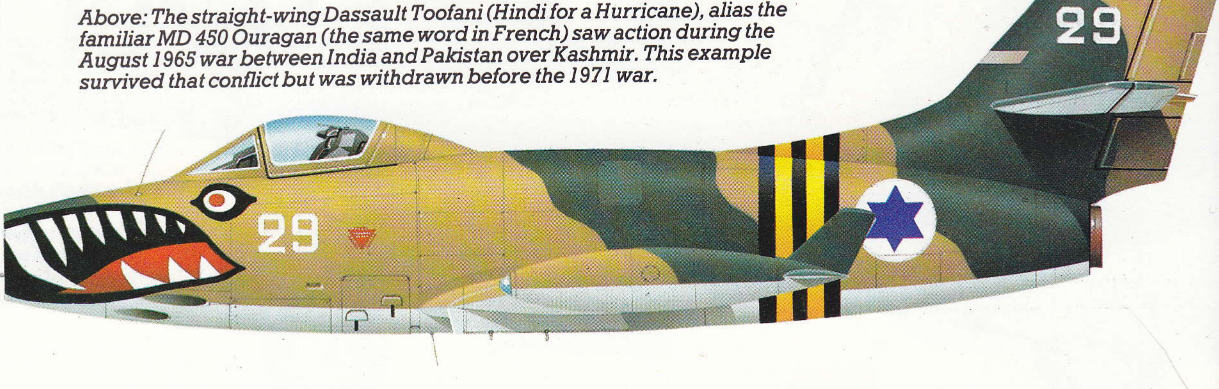
Armament: four 20-mm Hispano 404 cannon, plus up to 1000 kg (2,205 lb) of external stores



Above: Almost the simplest fighter that could possibly be designed around the superb British Nene engine (hardly used by Britain), the Dassault Ouragan set the French company on the road which today has produced the Mirages in all their versions. This Ouragan served with EC4 at Bremgarten, Germany.



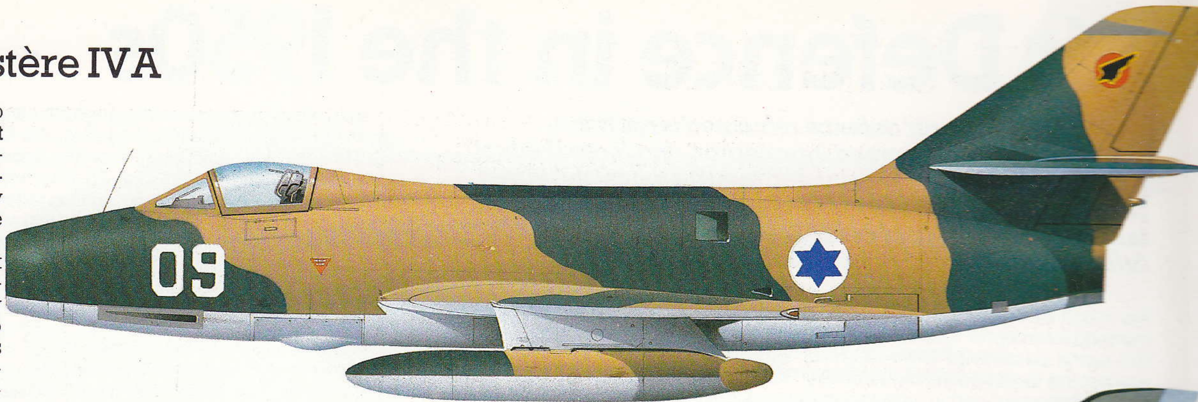
Above: The straight-wing Dassault Toofani (Hindi for a Hurricane), alias the familiar MD 450 Ouragan (the same word in French) saw action during the August 1965 war between India and Pakistan over Kashmir. This example survived that conflict but was withdrawn before the 1971 war.



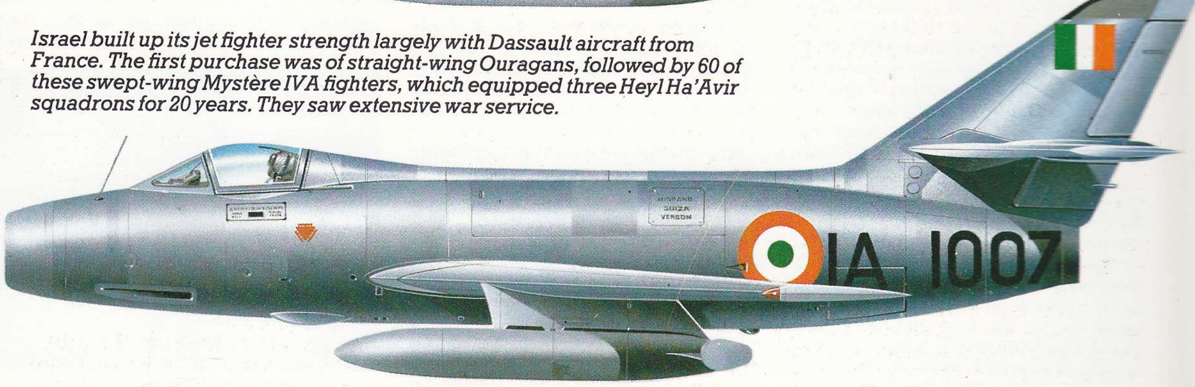
Right: Use of similar black and yellow stripes during the Suez campaign of November 1956 was held (rightly) by Egypt as evidence of conspiracy between Britain, France and Israel. This striped Dassault Ouragan was one of the first (1955) batch of 24, received just in time to participate.

FRANCE

Dassault Mystère IVA



Israel built up its jet fighter strength largely with Dassault aircraft from France. The first purchase was of straight-wing Ouragans, followed by 60 of these swept-wing Mystère IVA fighters, which equipped three Heyl Ha'Avir squadrons for 20 years. They saw extensive war service.



Like those of Israel, the 110 Dassault Mystère IVA fighters supplied to India took part in major air battles. Operated in both the air-defence and surface-attack roles, they partnered the earlier Toofanis (Ouragans) and campaigned against both Pakistan and China.

Although not the first aircraft type to bear the name Mystère, the **Dassault Mystère IVA** variant differed significantly from its predecessor, the **Mystère IIC**, which enjoyed only a very brief operational career with the French air force (l'Armée de l'Air).

Flown in prototype form for the first time on 28 September 1952, the Mystère IVA was in fact largely funded by the United States, being subject to two large offshore procurement orders covering the manufacture of 325 aircraft in all. Initial production specimens were powered by the Hispano-Suiza Tay 250A turbojet engine rated at 2850-kg (6,283-lb) thrust, but this was fairly soon supplanted by the rather more powerful Verdon 350 whilst other noteworthy differences between the Mystère IIC and Mystère IVA models centred around the wing and fuselage structure, the wing featuring increased sweep and reduced thickness/chord ratio while the fuselage was much more robust. Integral armament consisted of a pair of 30-mm DEFA cannon in the forward fuselage below the cockpit but external ordnance such as 227-kg (500-lb) or 454-kg (1,000-lb) bombs and rocket pods could be carried when the type was operating in the tactical role.

Introduction to the operational inventory came during 1955 when the Mystère IVA began to enter service with the 12^e Escadre at Cambrai. However, the advent of the Mirage in the early 1960s resulted in the Mystère IVA being progressively relegated to second-line training duties during that decade, and it is only fairly recently that the type has finally been withdrawn from Armée de l'Air service at Cazaux.

In addition to France, the air arms of India and Israel also operated the type in quite considerable numbers for several years, and the Mystère IVA saw combat action with both of these nations. Total production numbered 421 by the time the assembly line closed in late 1958 and, since they were funded by American money, most of the survivors have been returned to USAF control for disposal.

Specification

Dassault Mystère IVA

Type: single-seat fighter

Powerplant: one 3500-kg (7,716-lb) thrust Hispano-Suiza Verdon 350 turbojet

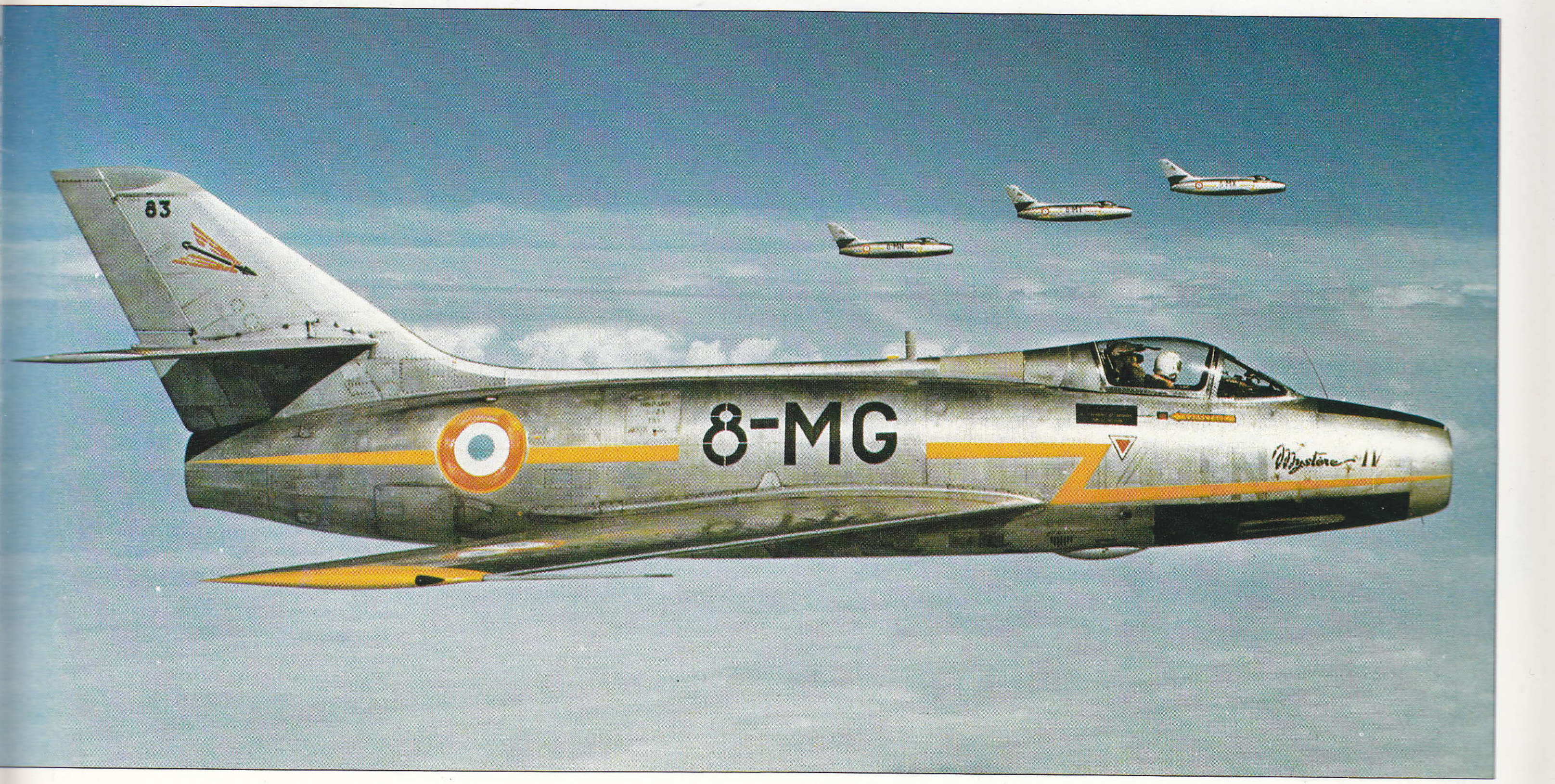
Performance: maximum speed 1120 km/h (696 mph) at sea level; initial climb rate 2700 m (8,860 ft) per minute; service ceiling 15000 m (49,215 ft); range, clean 915 km (569 miles); ferry range 1690 km (1,050 miles)

Weights: empty 5870 kg (12,941 lb); maximum take-off 9500 kg (20,944 lb)

Dimensions: span 11.12 m (36 ft 5¾ in); length 12.85 m (42 ft 2 in); height 4.60 m (15 ft 1 in); wing area 32.00 m^2 (344.46 sq ft)

Armament: two 30-mm DEFA cannon, plus two 454-kg (1,000-lb) or four 227-kg (500-lb) bombs, or two pods each containing 36 37-mm (1.46-in) rockets

A Dassault Mystère IVa of the French air force. The type entered service in 1955 with the 12^e Escadre at Cambrai and was replaced in front-line service by the Mirage III in the early 1960s. The aircraft shown here are from EC 1/8 Saintogne, formerly known as Maghreb when the squadron served in Algeria.



Air Defence in the 1950s

During the 1950s, air defence remained largely the prerogative of the manned interceptor, and large fleets of such aircraft were maintained to guard against the threat posed by the manned bomber. By the end of the decade much faith was being placed in surface-to-air missiles, and the future of the manned interceptor seemed bleak.

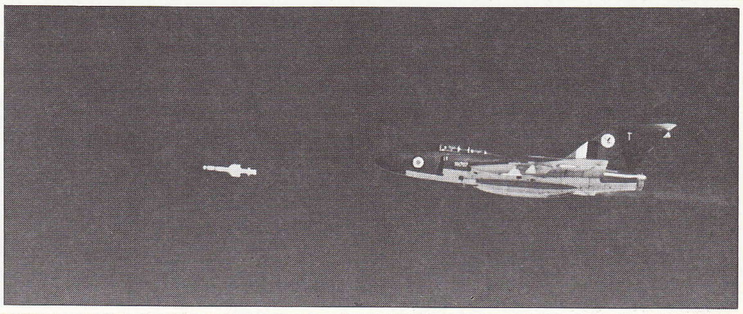
For much of the 1950s the task of air defence was still the prerogative of the manned interceptor for the most part, and most of the major air arms throughout the world possessed large fleets of such aircraft to guard their sovereignty against the threat posed by bombers. Radar, in some respects in its infancy, did play an important part in monitoring airspace but was often ineffective, especially with regard to the detection of aircraft operating at low level and, in most countries, it was felt necessary to maintain a large ground observer corps in order to provide some measure of warning against such intruders. Essentially, the methods and systems employed in air defence at the beginning of the decade were basically the same as those of World War II, and it is perhaps just as well that they were not called upon to perform in earnest for it is doubtful if they could have coped efficiently with a sizable and determined bomber force.

Soviet adventures in Berlin and Czechoslovakia, allied with the Korean War, provided the spur that was needed to set in motion a radical improvement of air defence capability both in Europe and on the North American continent, an early manifestation of this tendency being the introduction of specialist variants of existing fighters to fulfil the task of all-weather and night interception. However, these aircraft (including such types as the Venom, Meteor, Shooting Star and Sabre) still essentially comprised only an interim solution and it took a few more years before the first purpose-built night fighters appeared. Even then, early all-weather interceptors like the Northrop F-89 Scorpion, Avro Canada CF-100 and Gloster Javelin were large and relatively unwieldy. Moreover, they still relied upon unguided rockets and cannon armament as their principal weapons and it was not until the latter half of the decade that reliable radar-guided and heat-seeking missiles began to become available in worthwhile numbers, one such early weapon being the Hughes Falcon

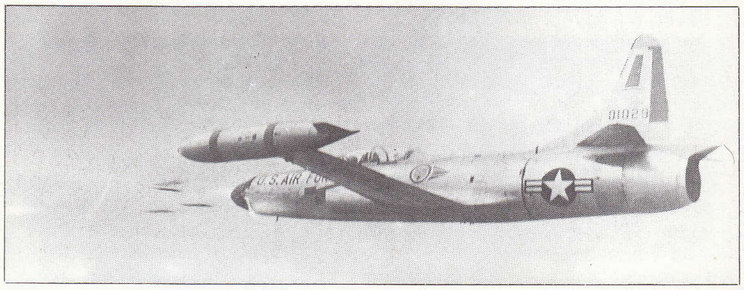
At the same time as more capable aircraft began to enter service, so efforts to improve radar coverage were implemented, particularly in the USA and Canada where a chain of radar stations (known as the Pinetree Line) was constructed in the early 1950s, supplemented fairly soon afterwards by the Mid-Canada Line along the 55th Parallel and the DEW (Distant Early Warning) Line within the Arctic Circle along the 69th parallel. Testing of equipment for the last began in 1953 and such was the degree of urgency that the DEW Line became operational on 1 August 1957 to furnish advanced warning of a bomber attack from the north. Increased coverage of the eastern and western seaboards was by no means so easy to achieve, but was eventually accomplished by a mixture of radar-equipped picket ships, permanently-emplaced 'Texas Towers', and airborne early warning and control aircraft in the shape of the Lockheed RC-121. All three of these systems were in regular use in 1957, by which time new and more capable fighters such as the McDonnell F-101 Voodoo and Convair F-102 Delta Dagger were operational or close to service introduction.

In Europe, systems were geographically smaller, although even here new and more sophisticated aircraft such as the English Electric Lightning and Dassault Super Mystère had appeared on the scene, along with European missiles such as Firestreak and the Nord AA.20. Improvements had also been made in the field of early warning with more capable radars being deployed, but the late 1950s were also a time when the emphasis on air defence began to alter significantly in favour of ground-based surface-to-air missiles, some experts going so far as to say that the day of the manned interceptor was past and that all future defence needs could be met satisfactorily by missiles.

By and large, though, air defence for the remainder of the decade was entrusted to fighter aircraft, types such as the Hawker Hunter and Sabre being employed by day whilst the Javelin, CF-100 and Sud-Ouest Vautour worked by night or in bad weather. Tactically, the methods employed had changed little from the days of World War II and, indeed, aerial exercises still largely featured the use of large numbers of fighters, engaging in mock battle in the skies above Europe and the United States on numerous occasions.



A Firestreak (Blue Jay) AAM is fired from XH707, a Gloster Javelin FAW.Mk 9 (rebuilt from a Mk 7) of RAF No. 23 Sqn. The Javelin was in production from 1955 to 1962, the post-1960 work largely being remanufacture to Mk 9 standard with afterburning engines.



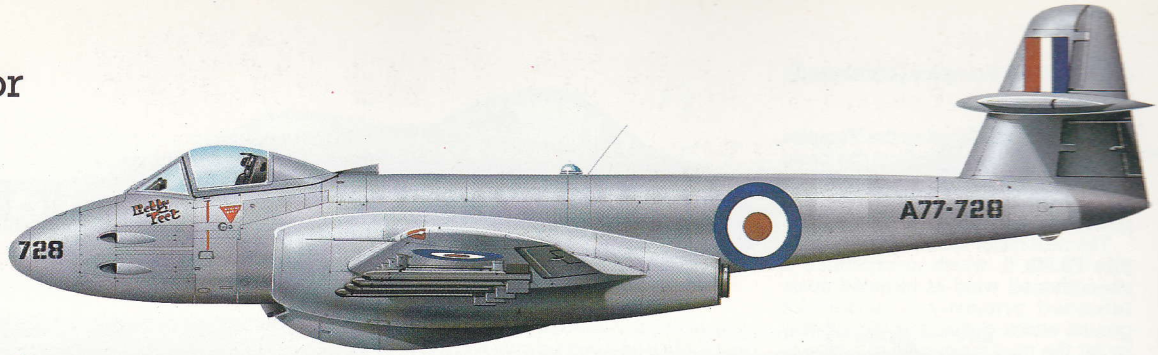
Above: Last of the Lockheed fighters that started with the XP-80 of January 1944, the F-94C Starfire weighed twice as much as the 1944 aircraft, yet could dive faster than sound. Here the nose-mounted FFARs are being fired.

Above: Near the highest point in the USA – Mount McKinley, Alaska – these Northrop F-89D Scorpion night fighters became operational at frozen Eilson AFB in 1954. Wingtips and tails in this theatre were painted red to show up after a forced landing.

Left: A neat 'vic' formation of Meteor NF.Mk 14s of No. 152 Sqn, based at Wattisham, and then Stradishall, between 1954 and 1958. No. 152 Sqn was one of many RAF squadrons which was disbanded, never to be reformed.

UK

Gloster Meteor



The Meteor F.Mk 8s of No. 77 Sqn, Royal Australian Air Force, were the only British-built jet aircraft to see service in the Korean War. Mediocre performance as an interceptor led to the Meteors being switched to a ground attack role in which they enjoyed greater success.

The first jet-powered fighter to enter squadron service with the Royal Air Force and the only jet to undertake operational duty with the Allies during World War II, the **Gloster Meteor** began life in response to Specification F.9/40, which called for a single-seat interceptor. The jet engine was still very much in its infancy when this project got under way and the low thrust available from early powerplants of this type necessitated the adoption of twin-engine layout from the outset.

Under the impetus of war, design progress was swift and was rewarded with a contract for 12 prototypes in February 1941, although only eight of these prototypes were eventually completed. The first of these began taxi trials with four types of engine in June 1942 but it was not until 5 March 1943 that the type took to the air for the first time, this maiden flight being made by the fifth prototype. By then, the Meteor had been ordered into production, examples from the initial batch of 20 **Meteor F.Mk I** aircraft entering service with No. 616 Squadron on 21 July 1944. Two weeks later the type opened its account when a V-1 missile was destroyed.

The next major production model was the **Meteor F.Mk III**, which saw operational service with both Nos 616 and 504 Squadrons, being mainly employed in ground attack duties, but only a few of the 280 Meteor F.Mk IIIs built had entered service by VE-Day.

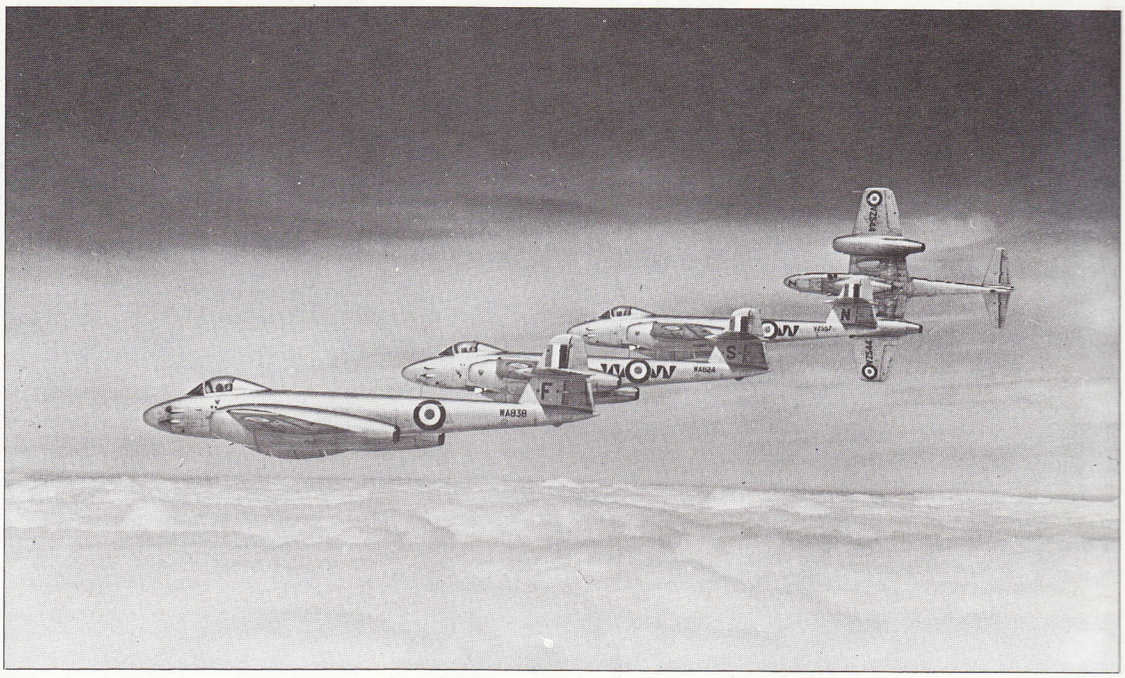
Production then switched to the **Meteor F.Mk 4** with much more powerful engines, 583 being built between 1945 and 1950 by which time the **Meteor F.Mk 8** was well established in service, this model also being built under licence in Belgium and the Netherlands. A development of the Meteor F.Mk 4 evolved as a private venture, the two-seat **Meteor T.Mk 7** trainer model was also produced in substantial numbers, over 600 being built from 1948 onwards, whilst other single-seater variants included the **Meteor FR.Mk 9** and **Meteor PR.Mk 10**, both of which were principally concerned with reconnaissance duties.

In addition to seeing widespread service as a day fighter, the Meteor also successfully adapted to night-fighter tasks, albeit as a two-seater. The initial variant engaged in this mission was the **Meteor NF.Mk 11**, this being succeeded by the **Meteor NF.Mk 12** with a different radar, the **NF.Mk 13** with tropical equipment, and the **Meteor NF.Mk 14** with a clear-vision canopy. Production of night-fighter variants eventually totalled 578, some later being modified for target towing duty as the **Meteor TT.Mk 20** whilst many single-seaters served as **Meteor U.Mk 15, Meteor U.Mk 16** and **Meteor U.Mk 21** drones.

Specification

Gloster Meteor F.Mk 8
Type: single-seat fighter
Powerplant: two 1633-kg (3,600-lb) thrust Rolls-Royce Derwent RD.8 turbojets
Performance: maximum speed 953 km/h (592 mph) at sea level; initial climb rate 2134 m (7,000 ft) per minute; service ceiling 13410 m (44,000 ft); range, clean 1110 km (690 miles)
Weights: empty 4846 kg (10,684 lb); maximum take-off 7836 kg (17,275 lb)
Dimensions: span 11.33 m (37 ft 2 in); length 13.26 m (42 ft 6 in); height 4.22 m (13 ft 10 in); wing area 32.52 m^2 (350 sq ft)
Armament: four 20-mm Hispano cannon

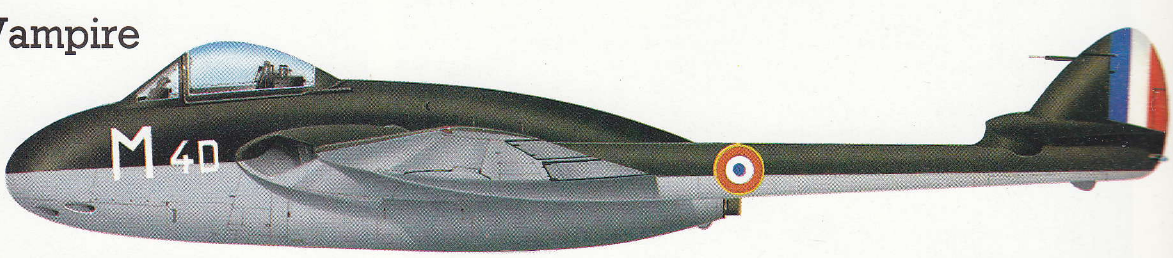
Above: Final night-fighter variant of the Meteor was the NF.Mk 14. These four aircraft wear the red and black chequerboard markings of No. 85 Sqn, based at West Malling, then the RAF's senior night-fighter squadron.



The Meteor F.Mk 8 formed the backbone of RAF Fighter Command until the introduction of the Hunter. These four Meteors carry the distinctive black and yellow 'tigerskin' markings of No. 74 Squadron, based at Horsham St Faith.

UK

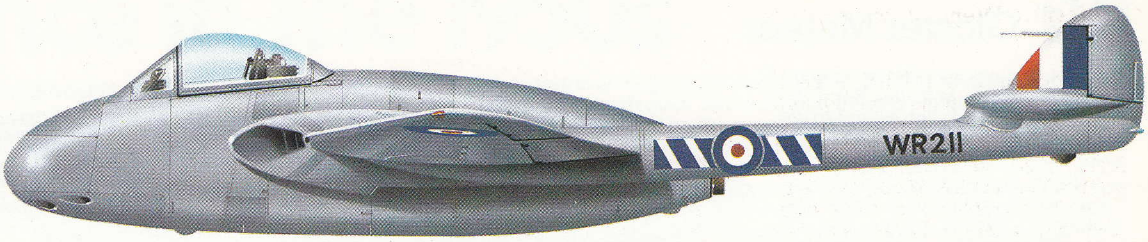
de Havilland Vampire



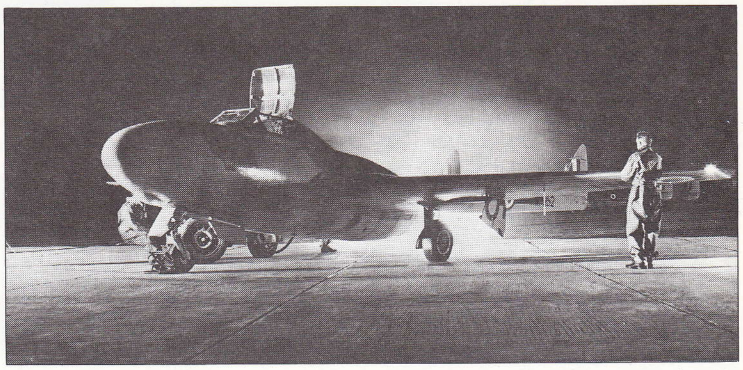
The Vampire was the first jet aircraft adopted by the French air force. Vampire FB.Mk 5s, like the one illustrated, were imported and built under licence by SNCASE, who went on to build some 250 Nene-engined SE.535 Mistrals.

Holding the distinction of being the UK's first single-engine jet fighter, the **de Havilland Vampire** first flew in prototype form from Hatfield on 20 September 1943, just 16 months after work on detail design had begun. Production was assigned to English Electric and it was not until 1946 that the **Vampire F.Mk 1** variant began to enter operational service with the Royal Air Force.

The original production model was soon supplanted in RAF service by the **Vampire F.Mk 3**, and it was this variant which was the subject of the first export orders, four aircraft being supplied to Norway and 85 to Canada. In addition, the type was also manufactured under licence in Australia, a total



Above: WR211 was built by Fairey as an FB.Mk 9 and served only with No. 32 Sqn at Nicosia and Shallufa. The FB.Mk 9 was designed specifically for service overseas and differed from the FB.Mk 5 in having cockpit air conditioning.



Right: The Vampire night fighter was developed as a private venture for export to Egypt. An arms embargo led to some 78 aircraft being delivered to the Royal Air Force where they replaced night-fighter variants of the wartime Mosquito. This is an aircraft of No. 25 Sqn, based at RAF Coltishall.

of 80 being completed as the **Vampire FB.Mk 30** and differing from the basic Vampire F.Mk 3 in that they were powered by the substantially more powerful Nene turbojet.

The next major model was the **Vampire FB.Mk 5**, which incorporated a strengthened wing of reduced span. Intended primarily to undertake ground attack duties, this variant was by far the most successful sub-type to appear, examples being exported to 11 overseas customers including Egypt, Finland, France, Iraq, Norway, Sweden and Venezuela, whilst it was also built under licence in France, Italy, and Switzerland. The Fleet Air Arm received numbers of carrier-equipped **Sea Vampires**.

Single-seat Vampire production terminated with the **Vampire FB.Mk 9**, which was essentially the Vampire FB.Mk 5 fitted with cockpit air-conditioning systems, examples of this model being delivered to the RAF as well as to Ceylon, Jordan and Rhodesia.

The only other Vampire variant possessing warlike capability was the **Vampire NF.Mk 10**, which was a two-seat all-weather/night-fighter development. Serving with the RAF for a few years during the mid-1950s, the Vampire NF.Mk 10 also joined the air arms of India and Italy in modest numbers, but none remain active today.

Vampire production terminated with the **Vampire T.Mk 11** and **Vampire T.Mk 22** two-seat trainers for the RAF and Fleet Air Arm respectively, 804 being completed between 1951 and 1958; this mark also achieved considerable export success.

Specification

de Havilland Vampire FB.Mk 5

Type: single-seat ground-attack fighter

Powerplant: one 1520-kg (3,350-lb) thrust de Havilland Goblin 35 turbojet

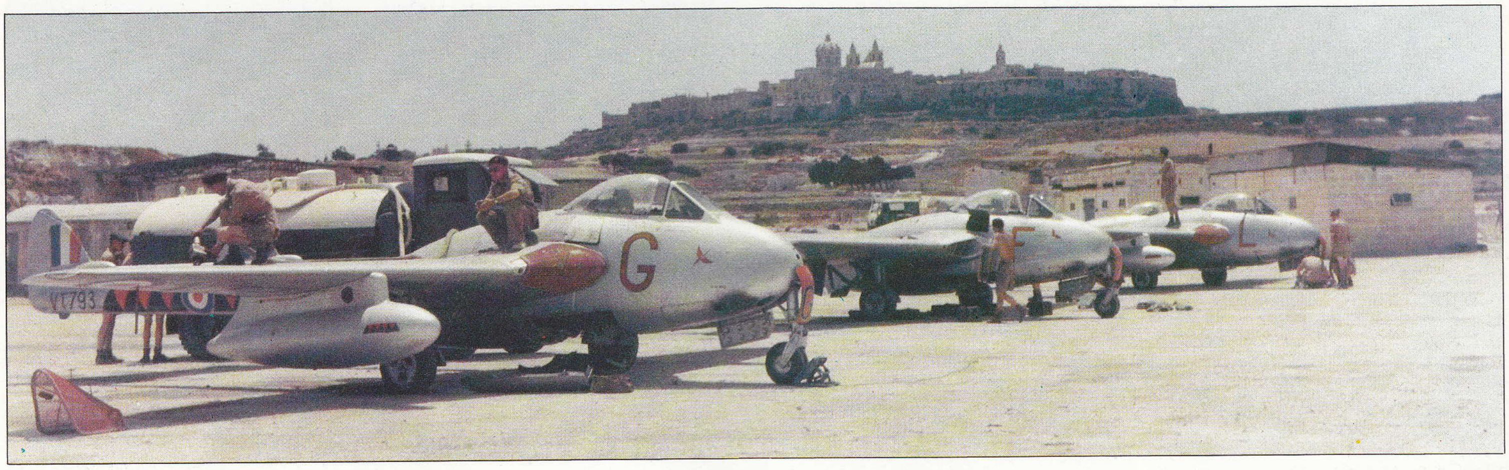
Performance: maximum speed 882 km/h (548 mph) at 9145 m (30,000 ft); initial climb rate 1463 m (4,800 ft) per minute; service ceiling 13045 m (42,800 ft); range 1963 km (1,220 miles)

Weights: empty 3304 kg (7,283 lb); maximum take-off 5620 kg (12,390 lb)

Dimensions: span 11.58 m (38 ft 0 in); length 9.37 m (30 ft 9 in); height 1.88 m (6 ft 2 in); wing area 24.34 m^2 (262 sq ft)

Armament: four 20-mm Hispano cannon, plus up to 907 kg (2,000 lb) of external stores

Vampires were used extensively by the 'Weekend Fliers' of the Royal Auxiliary Air Force squadrons. Here three Vampire F.Mk 3s of No. 601 'County of London' Sqn are seen on summer camp at RAF Takali, Malta in 1952. All the RAF's auxiliary squadrons were disbanded in 1957.



UK

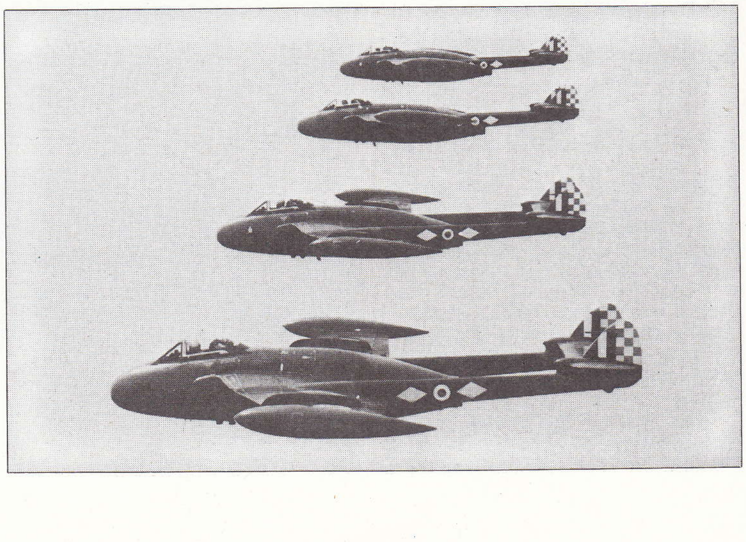
de Havilland Venom

Basically an enhanced variant of the Vampire, the **de Havilland Venom** has demonstrated remarkable longevity for a fighter aircraft, some still being active in Switzerland at the time of writing. First flown in prototype form on 2 September 1949, the **Venom FB.Mk 1** fighter-bomber was the initial production model, and this began to enter service with the Royal Air Force during the summer of 1952, additional machines being produced under licence by the Swiss as the **Venom FB.Mk 50** between 1953 and 1957.

Production for the RAF continued with the **Venom NF.Mk 2** and **Venom NF.Mk 3** two-seat night-fighters, these being operational between 1953 and 1957, when later Javelins began to replace them. Some night-fighter Venoms also saw service with the Royal Swedish air force until the beginning of the 1960s.

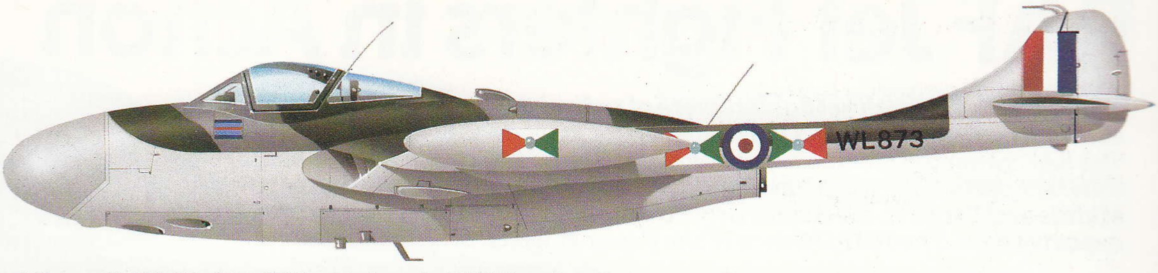
The final variant to be built for the RAF was the **Venom FB.Mk 4**, which differed from the **Venom FB.Mk 1** in having powered ailerons and rudders to offer improved controllability at high subsonic speed. Some modifications were also made to the fins, and this model also featured a slightly more powerful engine. In all, 100 were built in Switzerland, although these retain the same designation as earlier licence-manufactured machines.

No. 14 Sqn, Royal New Zealand Air Force, played a major part in Operation 'Firedog', the campaign in Malaya. Flying Venom FB.Mk 1s leased from the RAF, the squadron flew hundreds of sorties against terrorist targets.



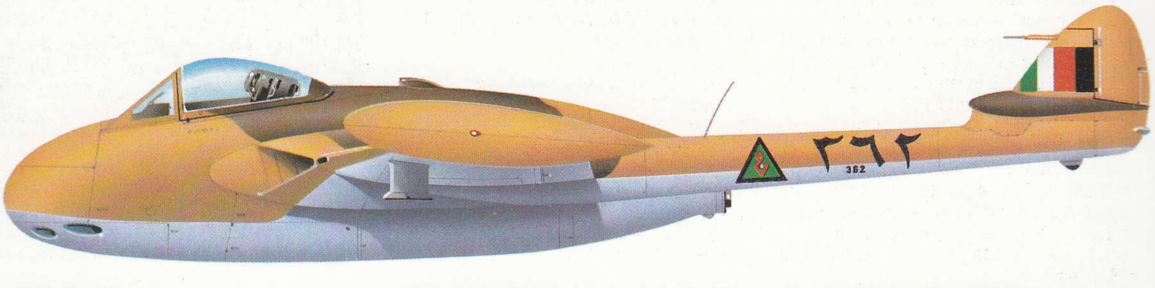
de Havilland Venom (continued)

In addition to land-based specimens, 262 two-seat night-fighters were completed for service with the Fleet Air Arm as the **Sea Venom FAW.Mk 20, Sea Venom FAW.Mk 21** and **Sea Venom FAW.Mk 22**, these ultimately being replaced by the Sea Vixen. France's Aéronavale also operated night-fighter Venoms from aircraft-carriers for several years, although in this instance they were licence-built by the Sud-Est concern, being known as the **Aquilon** in French service.



A Venom NF.Mk 2A of No. 253 Sqn stationed at RAF Waterbeach, the first squadron to be equipped with this mark. The Venom night fighter was initially criticized for its lack of ejection seats, although these were fitted later. Venom night-fighters were exported to Sweden, where they survived well into the 1960s.

Specification
de Havilland Venom FB.Mk 4
Type: single-seat ground-attack fighter
Powerplant: one 2336-kg (5,150-lb) thrust de Havilland Ghost 105 turbojet
Performance: maximum speed 961 km/h (597 mph) at sea level; initial climb rate 2204 m (7,230 ft) per minute; service ceiling 14630 m (48,000 ft); range 1730 km (1,075 miles)
Weights: empty 3674 kg (8,100 lb); maximum take-off 7180 kg (15,830 lb)
Dimensions: span 12.70 m (41 ft 8 in); length 10.06 m (33 ft 0 in); height 2.03 m (6 ft 8 in); wing area 25.99 m^2 (279.75 sq ft)
Armament: four 20-mm Hispano cannon, plus up to 907 kg (2,000 lb) of external stores



The Iraqi air force received about 30 Venom FB.Mk 50s between 1954 and 1956, and these aircraft equipped Nos 5 and 6 Sqns at Habbaniya. They were eventually replaced in service by Hawker Hunters. The Venom was exported to Venezuela and Switzerland, who still operate a handful.

UK

Hawker Hunter

Easily the most successful post-war combat aircraft to be designed and produced in the United Kingdom, the **Hawker Hunter** first flew in prototype form on 20 June 1951 and remains in fairly widespread service today, more than 30 years later.

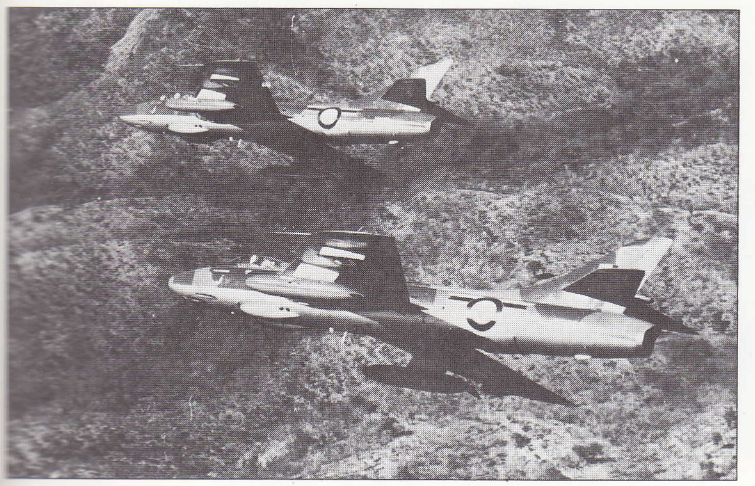
Initial production variants for the Royal Air Force comprised the **Hunter F.Mk 1** powered by the 3425-kg (7,550-lb) thrust Avon 113 and the **Hunter F.Mk 2** with the 3629-kg (8,000-lb) thrust Sapphire 101 engine, but performance differences were marginal. Entering operational service in mid-1954, the early Hunters were basically employed as short-range day interceptors, radius of action limitations being overcome to some degree by the **Hunter F.Mk 4** and **Hunter F.Mk 5** variants which benefited from increased internal fuel capacity and the ability to carry two 455-litre (100-Imp gal) external drop tanks. These two models both flew for the first time during October 1952 and were quickly introduced to service, the Hunter F.Mk 4 also becoming the first sub-type to secure export orders when the air arms of Belgium and the Netherlands acquired substantial numbers (most of them built under licences) whilst Sweden, Denmark and Peru also received some as the **Hunter F.Mk 50, Hunter F.Mk 51** and **Hunter F.Mk 52** respectively.

The last single-seat version to attain quantity production was the **Hunter F.Mk 6**, first flown in prototype form on 22 January 1954 and incorporating the substantially more powerful Avon 203 turbojet engine, rated at 4559-kg (10,050-lb) thrust. Manufacture of this variant was undertaken in the UK, Belgium and the Netherlands, and it eventually became the most widely used Hunter of all, providing the basis for aircraft exported to India **Hunter F.Mk 56**, Switzerland **Hunter F.Mk 58** and Iraq **Hunter F.Mk 59** amongst many others. In addition, a substantial number of RAF aircraft were later updated to **Hunter FGA.Mk 9** and **Hunter FR.Mk 10** configuration for ground-attack and reconnaissance tasks respectively.

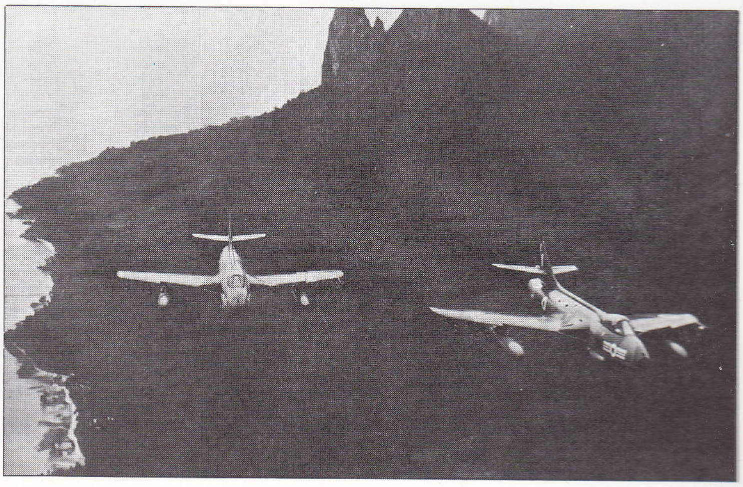
Development of a two-seat training derivative of the Hunter also got under way at a fairly early stage, making its maiden flight in July 1955. Known as the **Hunter T.Mk 7**, this embodied the favoured side-by-side seating arrangement and was produced in quite substantial numbers, most of the many export customers also taking delivery of some two-seaters for training duties.

Other variants known as the **Hunter GA.Mk 11** and **Hunter T.Mk 8** were delivered to the Fleet Air Arm for training purposes.

Specification
Hawker Hunter FGA.Mk 9
Type: single-seat ground-attack fighter
Powerplant: one 4559-kg (10,050-lb) thrust Rolls-Royce Avon 207 turbojet
Performance: maximum speed 1144 km/h (710 mph) at sea level; initial climb rate 5245 m (17,200 ft) per minute; service ceiling 16275 m (53,400 ft); range, clean 787 km (489 miles); ferry range 2965 km (1,840 miles)
Weights: empty 6532 kg (14,400 lb); maximum take-off 11159 kg (24,600 lb)
Dimensions: span 10.25 m (33 ft 8 in); length 13.98 m (45 ft 10½ in); height 4.02 m (13 ft 2 in); wing area 32.42 m^2 (349 sq ft)
Armament: four 30-mm Aden cannon, plus four 227-kg (500-lb) or 454-kg (1,000-lb) bombs, or four 455-litre (100-Imp gal) napalm tanks, or 24 76-mm (3-in) rockets, or four 51-mm (2-in) rocket pods



Two Hunter FGA.Mk 9s of No. 8 Sqn, based at Khormaksar, Aden. No. 8 Sqn's Hunters were used in 1961 in the Kuwait episode and during operations in the Radfan, operating in support of SAS and Royal Marine troops and playing a crucial role.



Two Hunter FGA.Mk 9s of No. 20 Sqn from RAF Tengah, Singapore. Used against suspected terrorists during the Indonesian confrontation, No. 20 Sqn's Hunters also took part in regular exercises and deployments to various SEATO nations. These aircraft both carry 3-in rockets.

RAF Jet Fighters in Action

None of the RAF's early jet fighters were of radical design, but what they lacked in aerodynamic sophistication they made up for in toughness and ease of operation. The RAF's Meteors, Vampires, Venoms and Hunters all saw active service in many different parts of the world, mainly in the ground attack role. Used extensively in the Middle and Far East, the Hunter proved a superb fighter and attracted numerous export orders. The 1957 Defence White Paper killed off British fighters.

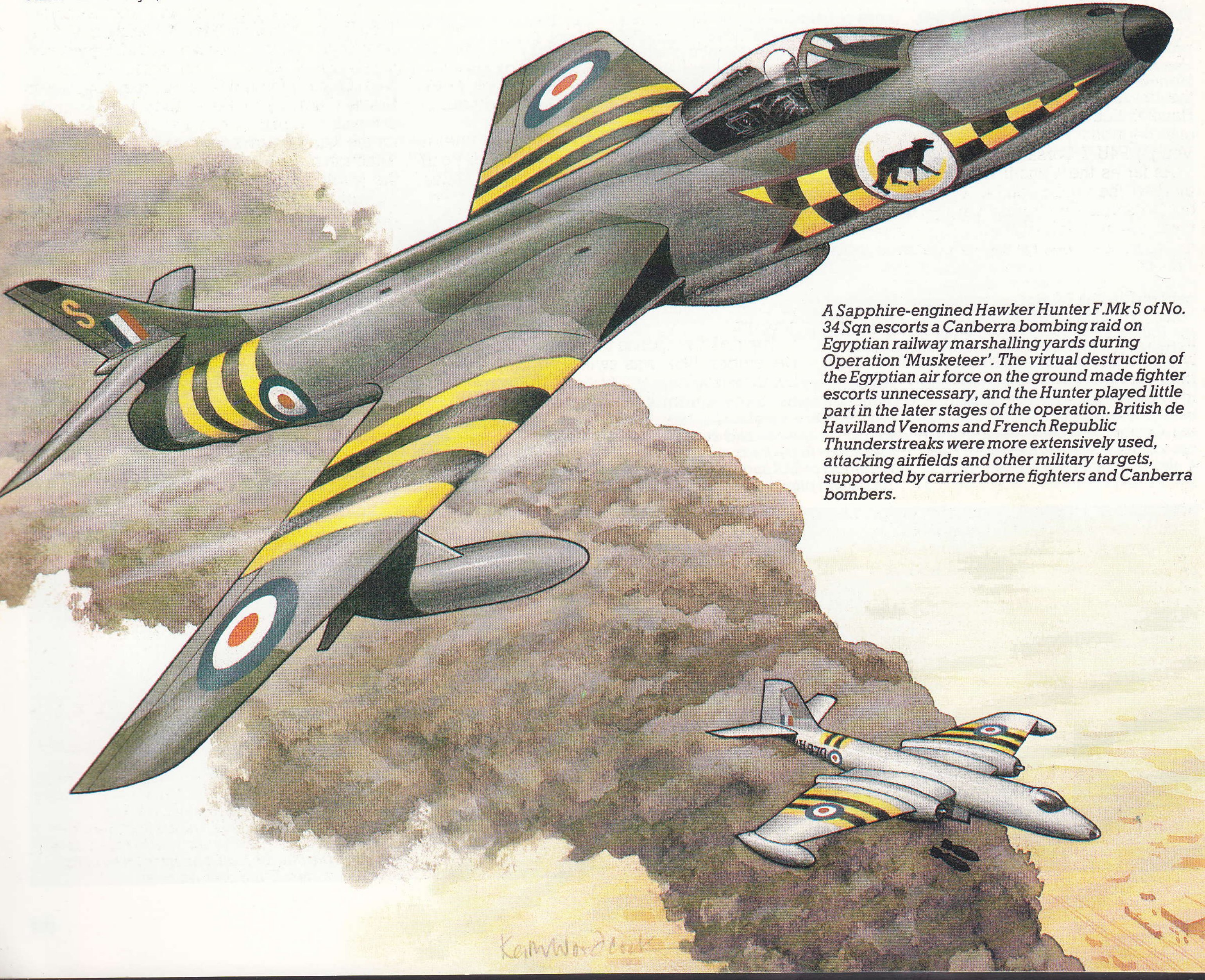
The dawn of the jet age as far as the UK is concerned can be traced back to the Gloster-Whittle E.28/39 which made a successful maiden flight on 15 May 1941, just seven months before the Japanese attack on Pearl Harbor brought the Americans into World War II. The E.28/39 in fact served only to prove the validity of the jet-power concept, and was never a serious candidate for further development. But the experience gained by Gloster proved invaluable when it came to developing the Meteor, which was the second British jet to fly and the only Allied fighter of World War II to go into combat courtesy of jet propulsion. Soon after World War II ended the de Havilland Vampire attained operational status with No. 247 Squadron, and it was these two physically very different types which provided the mainstay of the Royal Air Force as it entered the 1950s, a decade which witnessed the RAF in action on numerous occasions.

The first major post-war exposure to combat came in Malaya, where Communist terrorists began to make their presence felt very soon after World War II ended. In the event, RAF activity in counter-terrorist operations lasted for some 10 years, aircraft types initially committed to action being World War II veterans such as the Supermarine Spitfire and Hawker Tempest. Subsequently Operation 'Firedog', as it was known, witnessed the involvement of jet-powered fighters, with both the Vampire and its successor, the de Havilland Venom, flying many thousands of sorties between 1950 and 1955.

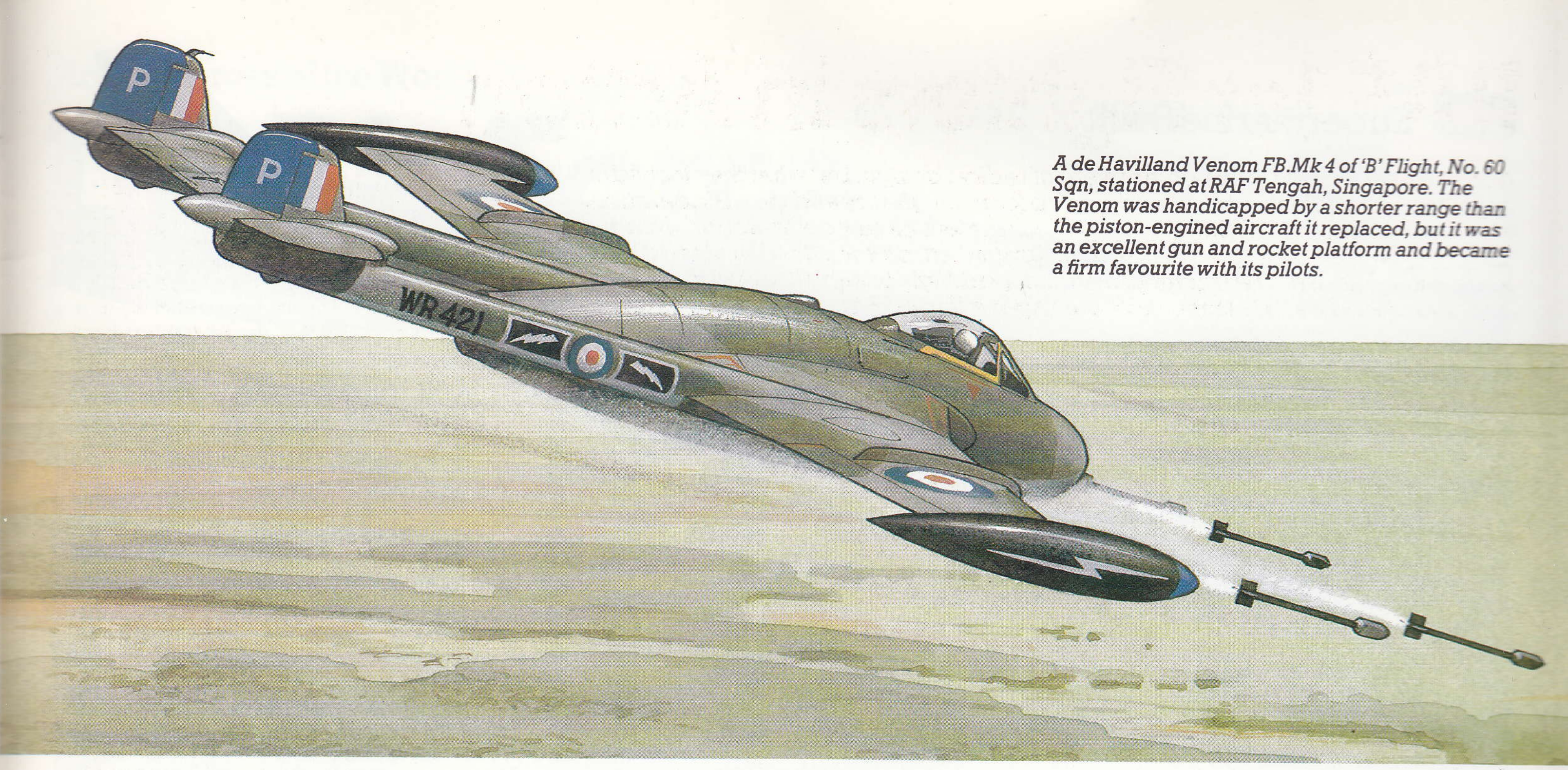
It was the Vampire which first appeared in this theatre, No. 60 Squadron at Tengah, Singapore, becoming the first Far East Air Force squadron to use the type in December 1950. The Vampire was soon in action, employing both rocket and cannon armament in attacks on terrorist hide-outs buried deep in the jungle. In February 1955, No. 60 Squadron traded in its vintage Vampires for the more modern Venom FB.Mk 1, 'Firedog' providing this type with its baptism of fire. Once again rocket and gun attacks formed the main means of conducting offensive operations, the Venom being a particularly good platform when using such weapons. By 1955, of course, the 10-year battle against Communist forces was drawing to a close and thus the Venom played only a relatively small part in Operation 'Firedog'.

Just a few months after the conclusion of the Malaya confrontation, however, the Venom was in action again, in company with more modern equipment such as the English Electric Canberra, Hawker Hunter and Vickers Valiant, in the Suez operation of November 1956. Once again the Venom performed well, Venom FB.Mk 4s of Nos 6 and 249 Squadrons at Akrotiri, Cyprus, making numerous rocket and gun attacks on military installations along the banks of the canal during the initial stages of the campaign and following up with further raids on Egyptian air bases, in which bombs were also employed.

In the opening phase of Operation 'Musketeer', Meteor NF.Mk 13s of No. 39 Squadron, which was detached to Akrotiri from Luqa, Malta, and Hunter F.Mk 5s of Nos 1 and 34 Squadrons, normally resident at Tangmere but now operating from Nicosia, also took part; their exposure to combat was very brief since neither type was able to remain on station for long. Subsequently, they reverted to their



A Sapphire-engined Hawker Hunter F.Mk 5 of No. 34 Sqn escorts a Canberra bombing raid on Egyptian railway marshalling yards during Operation 'Musketeer'. The virtual destruction of the Egyptian air force on the ground made fighter escorts unnecessary, and the Hunter played little part in the later stages of the operation. British de Havilland Venoms and French Republic Thunderstreaks were more extensively used, attacking airfields and other military targets, supported by carrierborne fighters and Canberra bombers.



A de Havilland Venom FB.Mk 4 of 'B' Flight, No. 60 Sqn, stationed at RAF Tengah, Singapore. The Venom was handicapped by a shorter range than the piston-engined aircraft it replaced, but it was an excellent gun and rocket platform and became a firm favourite with its pilots.

primary task of protecting the bases on Cyprus.

Although, from a political viewpoint, the Suez affair proved to be something of a 'hot potato', it provided clear evidence that the British armed forces were still able to conduct offensive operations in a most effective manner and, indeed, between them, the British and French components which took part in 'Musketeer' accounted for about 260 Egyptian aircraft on the ground at a cost of just one Venom, two Hawker Sea Hawks, two Westland Wyverns, one Republic F-84F Thunderstreak and one Vought F4U-7 Corsair.

As far as the Venom was concerned, Suez marked the type's combat swansong, phase-out beginning in the following year, and RAF involvement in subsequent policing and security operations was generally entrusted to the Hunter.

Versatile Hunter

Attaining operational service in May 1954, initially as an interceptor, the Hunter eventually evolved into a fine close air support aircraft, being able to use a variety of ordnance (including bombs, rockets and napalm) in conjunction with its four integral Aden cannon. As already noted, the Hunter's combat debut came in November 1956 when the Hunter F.Mk 5s of Nos 1 and 34 Squadrons briefly took part in the Suez debacle. Thereafter, the Hunter saw little overt action until the beginning of the new decade, but between 1961 and 1965 it enjoyed numerous opportunities to engage in combat, participating in several crises and generally giving a good account of itself.

One of the first such operations came in July 1961, when the oil-rich sheikhdom of Kuwait requested British assistance to resist Iraqi aggrandizement, that nation having made clear its intentions to annex its poorly-armed neighbour. As part of the sizable force which was assembled to counter any offensive action taken by Iraq, Hunter FGA.Mk 9s of No. 8 Squadron at Khormaksar (Aden) and No. 208 Squadron at Eastleigh (Kenya) rapidly deployed to Farwania airstrip in Kuwait, taking up station within 24 hours of the call for aid and beginning to fly armed reconnaissance sorties almost at once. Subsequently, they were joined by airlift and maritime patrol aircraft as well as a number of Canberras from the Near East Air Force and RAF Germany, whilst the Fleet Air Arm also contributed to the build-up, de Havilland Sea Vixens and Supermarine Scimitars operating from HMS *Victorious*.

In the event, Iraq refrained from the use of force and the crisis passed peacefully into history without any of the British combat elements engaging in action during the three-week emergency, the rapid response clearly being instrumental in preserving the peace.

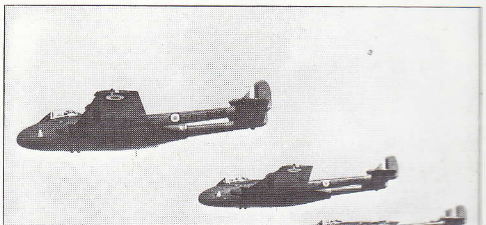
In distinct contrast, conflict with Indonesia over Borneo between 1962 and 1966 did call very heavily for the use of arms and, once again, the Hunter was deeply involved as was another 1950s fighter type, the Gloster Javelin. What was initially an internal rebellion quickly expanded into international confrontation in which the RAF's Far East Air Force played a major role, undertaking a variety of tasks such as airlift, maritime surveillance and close air support.

The RAF's response to the initial uprisings of December 1962 was swift, and within a few hours a sizable force of troops had been flown in. Subsequently, combat missions were mounted by the Hunter FGA.Mk 9s of No. 20 Squadron at Tengah, initially taking the form of mock attacks on rebel forces who had taken a number of hostages, although at a later stage in the three-year confrontation real attacks were conducted by both Hunters and Canberras.

By and large, though, the opportunities to deliver ordnance were few and far between, much of the work performed centring on escort duty for supply-dropping aircraft and the maintenance of Malaysia's aerial sovereignty, Indonesia having escalated the scale of conflict to encompass this country in 1963-4. However, although authorization had been given to engage and destroy any Indonesian aircraft which penetrated the Air Defence Identification Zone (ADIZ), in practice this proved impossible of achievement for the Indonesian pilots minimized the danger by spending only brief periods within the ADIZ. Hunters of No. 20 Squadron and Javelins of No. 60 Squadron were responsible for policing this zone, such operations being mounted from airfields at Labuan and Kuching.

Ultimately (and despite sporadic troop landings in 1965) the momentum of the Indonesian campaign diminished greatly, and by 1966 the confrontation was effectively over. In the meantime, though, the RAF had been involved in another part of the world, in response to the 1965 Rhodesian Unilateral Declaration of Independence. On this occasion, No. 29 Squadron's Javelin FAW.Mk 9s were despatched from the Near East Air force base at Akrotiri (Cyprus) to Ndola (Zambia) in December 1965 in order ostensibly to provide a measure of protection for the Kariba Dam and other potential targets. Although present in Zambia for several months, the Javelins were not called upon to fire their guns or missiles in anger, and they returned to Akrotiri in July 1966 when it became clear that the initial concern had been unfounded.

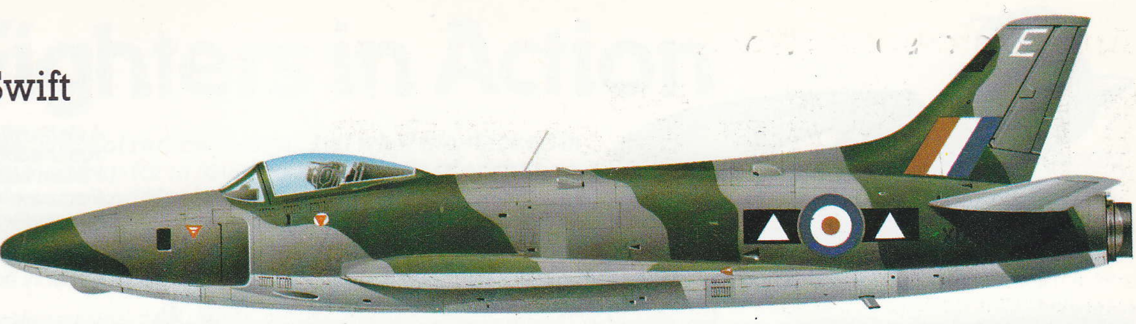
These operations, in conjunction with other similar small-scale conflicts in Aden and Kenya, provided the RAF with its only opportunities to engage in combat action during the 1950s and 1960s, but although the service was rarely called upon to fight, such opportunities did provide proof that its quality of training was more than adequate and that the equipment employed was equal to the task in hand.



The de Havilland Venom replaced the Vampire in the Middle East during the mid-1950s. With a more powerful engine and a new wing, it had a considerably better performance than the older aircraft. No. 6 Sqn was the first unit to receive the Venom in the Middle East, and here three of its aircraft are seen flying over Amman.

UK

Supermarine Swift



A Swift FR.Mk 5 of No. 2 Sqn based at RAF Jever. Afterburner gave the Swift useful acceleration and this, coupled with its good range, made it a very useful and effective reconnaissance tool. Interceptor Swifts were plagued by a host of problems which led to the disbandment of the only squadron so equipped.

Considered for a time as a very real competitor to the highly successful Hawker Hunter, the **Supermarine Swift** failed dismally to live up to its potential, only a relatively small number of the 175 or so that were eventually completed actually attaining operational service with the Royal Air Force.

Flown for the first time in prototype form on 1 August 1951, the Swift appears to have proceeded fairly smoothly through its development period, and was highlighted by the successful attempt on the world speed record of 24 September 1953, when Mike Lithgow piloted the prototype **Swift F.Mk 4** to 1183.5 km/h (735.4 mph) over a special course at Idris, Libya. As so often with the Swifts, however, this accomplishment was extremely short-lived, the record standing for just three days before it succumbed to a US Navy Douglas F4D-1 Skyray.

Nonetheless, the type showed some promise and deliveries to the Royal Air Force got under way during February 1954, the first examples of the **Swift F.Mk 1** being assigned to the Air Fighting Development Squadron for operational trials. Shortly after this the type began to enter operational service with No. 56 Squadron, but the pure fighter variant was destined to enjoy only a very brief career, those examples of the Swift F.Mk 1 and **Swift F.Mk 2** which equipped No. 56 being retired in March of the following year, largely as a result of the type's poor all-round qualities. Subsequently, most of the remaining Swift F.Mk 2 and **Swift F.Mk 3** production examples were passed directly from storage to technical schools, where they served as instructional airframes.

One variant of the Swift which did succeed was the **Swift FR.Mk 5** for photo-reconnaissance duties, this serving with Nos 2 and 79 Squadrons from Gütersloh, West Germany. Introduced by No. 2 Squadron during February 1956, the Swift FR.Mk 5 remained operational until early in 1961 when re-equipment with the Hunter FR.Mk 10 was completed. The only other noteworthy Swift derivative was the **Swift F.Mk 7** which equipped the Guided Weapons Development Squadron at Valley during the late 1950s, being employed on trials work in connection with the Fairey Fireflash guided missile. Following a single prototype, 12 examples of the Swift F.Mk 7 were completed, and one of these remained in an airworthy state until about the mid-1960s, at one time taking part in a series of trials relating to braking efficiency on wet runways.

Specification

Supermarine Swift FR.Mk 5

Type: single-seat interceptor/ reconnaissance fighter

Powerplant: one 4287-kg (9,450-lb) afterburning thrust Rolls-Royce Avon Mk 114 turbojet

Performance: maximum speed 1102 km/h (685 mph) at sea level; initial climb rate 4468 m (14,660 ft) per minute; service ceiling 13960 m (45,800 ft); range 1014 km (630 miles)

Weights: empty 6094 kg (13,435 lb); maximum take-off 9831 kg (21,673 lb)

Dimensions: span 9.85 m (32 ft 4 in); length 12.90 m (42 ft 3½ in); height 4.00 m (13 ft 2 in); wing area 30.44 m^2 (327.7 sq ft)

Armament: two 30-mm Aden cannon, plus provision for external stores

A Swift FR.Mk 5 of No. 79 Sqn, RAF Gütersloh, during a loop. RAF Swift FR.Mk 5s won the NATO low-level reconnaissance competitions in 1957 and 1959, and did not suffer the problems which had beset the earlier marks.

UK

Gloster Javelin

Unique in being the first twin-engine delta-wing aircraft to fly and the first all-weather fighter to be developed from the outset as such by the UK, the **Gloster Javelin** eventually disappeared from the operational RAF inventory in the late 1960s, bringing to a close a service career which began in February 1956.

Flown for the first time in prototype form on 26 November 1951, the Javelin suffered a protracted development period, being subjected to delays arising from poor handling qualities and difficulties with integration of the radar, and it was not until late July 1954 that the first production specimen made its maiden flight. This was the **Javelin FAW.Mk 1**, which began to enter service with No. 46 Squadron in February 1956, but it was quickly superseded in production by the **Javelin FAW.Mk 2** which featured American interception radar in place of the British equipment originally fitted. Both of these models were armed with a battery of four 30-mm Aden cannon, as was the **Javelin FAW.Mk 4** which introduced an all-moving tailplane in an attempt to eliminate excessive stick force requirements when flying at high indicated speeds.

Additional fuel capacity was introduced in the **Javelin FAW.Mk 5**, which was otherwise virtually identical to the Javelin FAW.Mk 4, and both of these variants duly entered service during 1957. The final 'first-generation' model was the **Javelin FAW.Mk 6**, which was basically a Javelin FAW.Mk 5 fitted with American radar.

Whilst production of these was progressing, a major redesign effort had been initiated with the objective of installing the rather more powerful Sapphire 200 series engine, and the first model to appear with this powerplant was the **Javelin FAW.Mk 7**, which also incorporated increased fuel capacity, Firestreak infra-red homing missiles and later interception equipment, though this entailed the loss of two Aden cannon. The Javelin FAW.Mk 7 took to the air for the first time in November 1956, deliveries getting under way in August 1958. This model was succeeded by the **Javelin FAW.Mk 8** with US radar, drooped wing leading edges and a very simple afterburner system. Entering service with No. 41 Squadron during early 1960, the Javelin FAW.Mk 8 was the last new-build Javelin variant to appear, production of the type terminating on 16 August 1960 when the 381st example made its initial flight. Subsequently, about 50 Javelin FAW.Mk 7s were updated to the definitive Javelin FAW.Mk 8 configuration, though retaining British radar, as **Javelin FAW.Mk 9** aircraft.

The only other variant which deserves mention was the **Javelin T.Mk 3** dual-control trainer, of which 21 were built.

Specification

Gloster Javelin FAW.Mk 8

Type: two-seat all-weather interceptor

Powerplant: two 5548-kg (12,230-lb) afterburning thrust Bristol Siddeley Sapphire Mk 203/204 turbojets

Performance: maximum speed 1101 km/h (684 mph) at sea level; initial climb rate 3734 m (12,250 ft) per minute; service ceiling 15645 m (51,330 ft); range with two 1137-litre (250-Imp gal) drop tanks 1497 km (930 miles)

Weight: maximum take-off 18144 kg (40,000 lb)

Dimensions: span 15.85 m (52 ft 0 in); length 17.16 m (56 ft 3½ in); height 4.88 m (16 ft 0 in); wing area 86.12 m^2 (927 sq ft)

Armament: two 30-mm Aden cannon, plus four Firestreak air-to-air missiles

Two Javelin FAW.Mk 1s of No. 46 Sqn, RAF Odiham, the first squadron to be equipped with the Javelin and the world's first delta-winged squadron. The Javelin offered a considerable increase in performance over the Meteors it replaced, but it was difficult to keep serviceable.

Armed Forces of the World

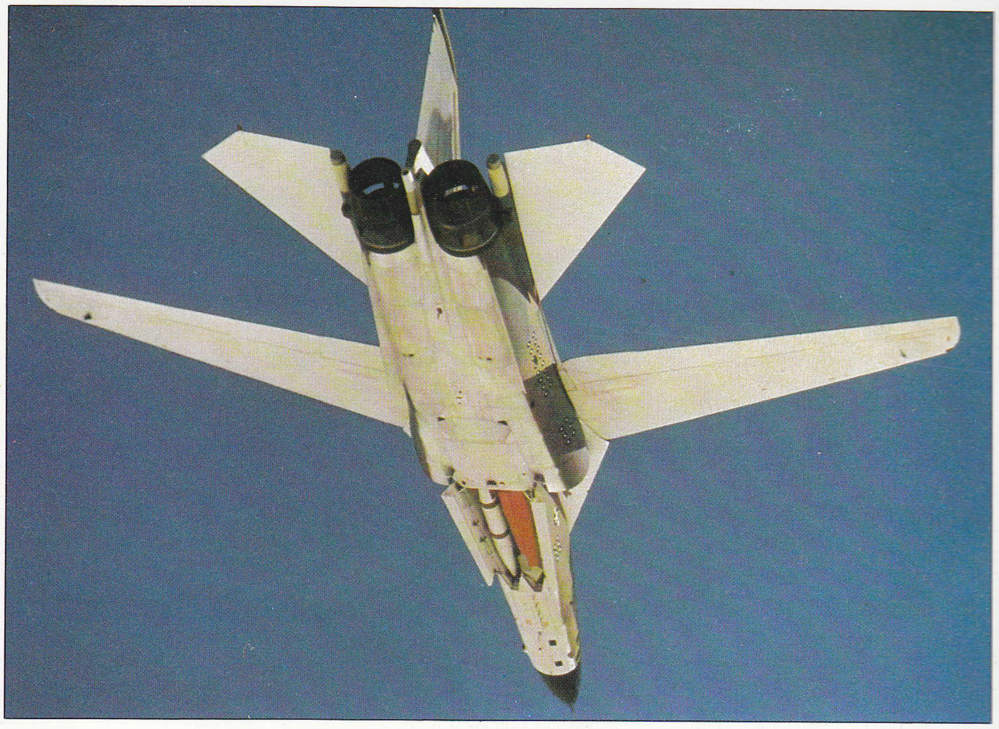
US Air Force

Part 1

The Western world's largest and most powerful air arm, the United States Air Force (USAF) operates more than 7,000 aircraft, this impressive total being boosted by close to 2,100 additional machines that are assigned to the Air National Guard (ANG) and Air Force Reserve (AFRes); the majority could be called to active duty in conflict at the discretion of the President, acting in his capacity as commander-in-chief. No less impressive are the numbers of personnel, figures released for the 1982 fiscal year indicating that regular forces totalled 581,000 whilst reservists comprised 100,000 with the ANG and 64,000 with the AFRes. A further 236,000 civilian personnel are employed by the USAF, many in an administrative capacity, although roughly one-third are responsible for major aircraft maintenance, modification and overhaul work performed by the Air Force Logistics Command (AFLC).

Having had to employ combat aircraft based on the technology of the 1950s for much of the Vietnam War, US Air Force tactical assets have in the past 10 years or so been considerably updated, a process which began with the McDonnell Douglas F-15 Eagle in the early 1970s and continues today; large numbers of F-15s, General Dynamics F-16s and Fairchild Republic A-10s have been delivered in recent years. Procurement of these three types continues, and, looking to the future, Rockwell's B-1B will at long last provide Strategic Air Command (SAC) with an infusion of new equipment, terminating a period of what might best be described as 'make do and mend' in which the veteran Boeing B-52 Stratofortress has been progressively updated to ensure its continuing effectiveness. SAC will also be responsible for another new weapon system, the MEM-118 Peacekeeper ICBM (Intercontinental Ballistic Missile), perhaps better known as MX. The subject of considerable controversy in recent years, Peacekeeper will, if present planning is followed, enter service in 1986, although the basing mode to be employed has still to be decided after a long-running saga which comes close to emulating TV soap operas.

Moving to less warlike aspects, airlift capacity has been significantly boosted by the recently-completed programme of 'stretching' Military Airlift Command's (MAC) fleet of Lockheed C-141A StarLifters, the resulting C-141B being a far more capable machine in that it can be refuelled in flight, thus bestowing genuine global capability on MAC's workhorse. MAC is also to receive an infusion of new equipment in the shape of the Lockheed C-5B Galaxy, delivery of the first of a projected total of 50 being due to start in 1986. And Air Training Command (ATC) will also begin to be updated in the latter half of the present decade when the Fairchild T-46 NGT (New Generation Trainer) begins to enter service. Due to fly for the first time in April 1985, the



A General Dynamics FB-111 equipped with AGM-69A SRAM (Short Range Attack Missile). The decision to purchase the Rockwell B-1B makes it likely that these aircraft will not be stretched and updated as was once planned.

That ageing giant, the Boeing B-52 Stratofortress, will remain in front-line service with the USAF until well into the next decade. A component of America's strategic nuclear force, the B-52 may itself carry ALCMs (Air-Launched Cruise Missiles).

12 PASS

A USAF McDonnell Douglas KC-10A Extender refuels a Boeing B-52G Stratofortress. Strategic Air Command no longer maintains a round-the-clock airborne alert, but B-52 squadrons are kept on instant alert. The B-52G's range and endurance can be multiplied enormously by using tankers.

T-46 will initially supplant, and eventually replace, the Cessna T-37 with ATC, an eventual total of no less than 650 being required to fulfil basic training tasks for the remainder of this century. Even further ahead, in the 1990s, the USAF expects to deploy the much-vaunted 'Stealth' technology in the shape of yet another new bomber which is now under development by a consortium made up of Boeing, Northrop and Vought, whilst Lockheed is also understood to be working on another 'Stealth' project, apparently a tactical reconnaissance aircraft similar in size to the McDonnell Douglas F/A-18 Hornet. Fighter-sized stealth prototypes are rumoured to have been flying in Nevada since 1978.

Responsibility for control of two of the three elements which form the United States strategic nuclear triad is vested in Strategic Air Command (SAC) with headquarters at Offutt AFB on the outskirts of Omaha, Nebraska. Both of these elements (manned bombers and land-based ICBMs) are to be the subject of modernization during the remainder of the present decade, with older aircraft and missiles being retired from the inventory as new and potentially far more capable weapons are introduced. This process has already begun with a fairly major reorganization of existing bomber assets resulting in the withdrawal of the older Boeing B-52D Stratofortresses. Optimized for conventional bombing duties, the B-52D provided the backbone of SAC activity in South East Asia, and its passing has resulted in some B-52Hs being configured to perform similar tasks as well as sea surveillance duties as part of the SAC contribution to the Rapid Deployment Force. These are, however, unable to carry quite so large a weapons load. Withdrawal of the B-52D has resulted in a contraction of the bomber fleet, the number of active squadrons being scheduled to fall from 25 to 21, operating approximately 270 B-52Gs and B-52Hs plus a further 60 or so General Dynamics FB-111As. Similarly, six Strategic Missile Squadrons (SMSs) with the older liquid-fuelled LGM-25C Titan II ICBM are to be disbanded with the missiles being gradually removed from their silos, a process which began in 1982 and is scheduled for completion in 1987.

Operational elements of SAC are organized within two numbered Air Forces: the 9th Air Force with headquarters at Barksdale AFB, Louisiana, and the 15th Air Force with headquarters at March AFB, California. Both possess aircraft- and missile-equipped units, command and control devolving via a number of subordinate Air Divisions to the respective bomber and missile Wing organizations at the various air bases.

Essentially, the 8th Air Force is responsible for those units located to the east of the Mississippi and is predominantly an aircraft-operating command with eight B-52 Bomb Wings, two FB-111 Bomb Wings, two Titan Missile Wings and one Minuteman Missile Wing. Two Air Refuelling Wings, each with two squadrons of Boeing KC-135 Stratotankers, and two single-squadron Air Refuelling Groups make up the remaining operational elements of this command.

Units to the west of the Mississippi constitute the somewhat larger 15th Air Force, an organization with a preponderance of ICBMs, there being five Minuteman Missile Wings and a single Titan Missile Wing as well as seven B-52 Bomb Wings, a couple of tanker units and two Strategic Reconnaissance Wings, one with the Lockheed SR-71As, Lockheed U-2Rs and Lockheed TR-1s at Beale AFB, California, whilst the other has various marks of Boeing RC-135 at Offutt, operating alongside EC-135s and Boeing E-4s engaged in the airborne command post role. In addition, the 15th Air Force is also responsible for the 6th Strategic Wing at Eielson AFB, Alaska, which has a single RC-135 reconnaissance squadron and also controls the activities of rotational KC-135 Stratotankers assigned to the aerial refuelling mission.

The US Air Force has now ordered 100 Rockwell B-1Bs, which will be able to penetrate present and predicted hostile defences until at least the mid-1990s. The B-1B will carry nuclear air-to-ground missiles, conventional or nuclear free-fall bombs and extra fuel.